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MONTEREY, CALIFORNIA

THESIS

**UNITED STATES AND RUSSIAN COOPERATION ON
ISSUES OF NUCLEAR NONPROLIFERATION**

by

Daniel Petersen Speer

June 2005

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**UNITED STATES AND RUSSIAN COOPERATION ON ISSUES OF NUCLEAR
NONPROLIFERATION**

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

This thesis summarizes and analyzes the key factors in the cooperative U.S.-Russian effort, pre- and post- 9/11, to prevent nuclear proliferation. Especially highlighted are pertinent efforts to prevent terrorist organizations from obtaining nuclear weapons or nuclear weapons capabilities. This thesis catalogues both, Russian and the U.S. successes and failures to prevent nuclear proliferation through administration policies, as well as, the various cooperative threat reduction measures employed in coordination with the nations that once composed the former Soviet Union. Finally, this thesis offers a prediction of what the near future will hold for threat reduction and arms elimination programs.

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I. NUCLEAR NONPROLIFERATION: AN ANALYSIS OF UNITED STATES AND RUSSIAN COOPERATION

A. STATEMENT OF PURPOSE

The purpose of this thesis is to analyze key treaties, agreements, and factors in the United States-Russian cooperation on issues of nuclear nonproliferation. This thesis reviews the emergence of key agreements such as the Cooperative Threat Reduction (CTR) program and the current Bush Administration's Proliferation Security Initiative (PSI). Furthermore, this thesis examines the main considerations, events, and issues that have guided the Russian-U.S. relationship on issues of nuclear nonproliferation thus far, and further portends what the next few years may hold regarding the joint U.S.-Russian efforts to prevent nuclear proliferation.

This topic is important for three primary reasons. First, after the collapse of the Soviet Union in 1991, there was a significant lack of command, control, and security of former Soviet nuclear weapons, weapons-grade material, and the scientific know-how (i.e. the nuclear capable intelligencia). This was quickly recognized as a major issue for the United States and our national security, not to mention the stake the emerging nations of the former Soviet Union had in ensuring that the former Soviet nuclear complex was secured, accounted for, and eventually dismantled. Second, in addition to the discussions in the 1990s, today's debate includes the very real nature and possibility of terrorist organizations procuring nuclear weapons or nuclear weapons capabilities in order for detonation in a large population center and/or mass destruction of essential national infrastructure. This issue is one of the most dynamic problems facing the Nuclear Nonproliferation Regime and the United States-Russian cooperation. The historical lack of command and control of the former Soviet nuclear arsenal has provided for a real threat of nuclear proliferation to rogue states and/or terrorist organizations. Third, the process of cooperation between Russia and the United States has evolved under the framework of international cooperation and has at times been less than successful. Highlighting some of the impediments to successful prevention of nuclear proliferation will hopefully provide a coherent analysis of how the U.S.-Russian relationship can grow further in continuing to prevent nuclear proliferation, especially keeping nuclear weapons

and nuclear capable materials from falling into the hands of rogue states and non-state actors. Starting with an accurate assessment of recent successes and failures and incorporating an evaluation of both American and Russian efforts to prevent nuclear proliferation will aid in the formation of future nonproliferation plans while concurrently addressing shortcomings and possible steps to strengthen this cooperation.

B. MAJOR QUESTIONS AND ARGUMENT

This thesis investigates major issues surrounding the United States-Russian cooperation on issues of nuclear nonproliferation. In addition, this thesis considers the many steps that have been taken to thwart nuclear proliferation thus far and analyzes proposed structures to continue successful prevention of nuclear proliferation. For example, the historical effects of the international Nuclear Nonproliferation Regime and the current Bush Administration's proposal of the Proliferation Security Initiative as the possible future of nuclear nonproliferation. A thorough analysis of the United States' and Russian cooperation in order to secure, account for, and dismantle former Soviet nuclear weapons while working in concert with each other to globalize their cooperation is an indispensable facet of this thesis. The rogue nation and terrorist aspect that has pervaded the issue of nuclear proliferation garners a large portion of the contemporary motivation to exacerbate nuclear proliferation. It is, thusly, intently discussed in this thesis, as well; it garners a fair amount of the consideration surrounding the U.S.-Russian cooperation on issues of nuclear nonproliferation.

This thesis looks to answer three major questions: (1) What are the instruments of U.S.-Russian Cooperation on issues of Nuclear Nonproliferation? (2) How has the United States and Russia effectively (or not) cooperated on issues of Nuclear Nonproliferation? And what does the future hold for U.S.-Russian cooperation and how does the current nonproliferation infrastructure support future nonproliferation efforts? The second question leads to supplemental questions concerning the issue of future cooperation and globalization of the nuclear nonproliferation effort and frameworks that the United States and Russia have developed over the past fifteen years. The third question looks to define possible future effects of current nonproliferation efforts and how these current efforts may lead to an expanded range of nonproliferation. The ultimate goal is to give a

comprehensive assessment of the contemporary U.S.-Russian cooperation on issues of nuclear nonproliferation while foretelling the near future of this cooperative effort and the possibility of globalizing these efforts to further prevent nuclear proliferation.

C. BACKGROUND

After the collapse of the Soviet Union in 1991, the international concern over the lack of control, accountability, storage, and dismantlement of the Soviet Nuclear weapons arsenal prompted two prominent U.S. Senators, Sam Nunn (D-GA) and Richard Lugar (R-IN), to introduce their Cooperative Threat Reduction (CTR) Program. The initial goal of this program was to highlight the dire circumstances that were created when the Soviet Union broke up into its constituent parts. The four nuclear republics: Belarus, Kazakhstan, Russia, and the Ukraine, presented the United States with a very unique national security, regional security, and a possible international security dilemma regarding nuclear proliferation. Since the inception of the CTR program in November 1991, it has evolved to include mechanisms to address the lack of command and control over Soviet nuclear weapons; it instituted mechanisms to address security, accountability, transportation, and destruction of the Soviet nuclear arsenal; and it has initiated several other apparatuses to deal with the possibility of nuclear proliferation via the former Soviet nuclear arsenal.

From the standpoint of U.S.-Russian cooperation, CTR provides, possibly, the most prevalent and significant example of this existing effort in cooperation. There are currently many U.S. attempts to maintain a high level of assistance to Russia (and Kazakhstan, Belarus, and the Ukraine) while ensuring that nuclear proliferation from the Russian stockpile does not create an international predicament. Furthermore, since the events of September 11, 2001, the international apprehension of terrorism has become a major issue of importance for most nations. This issue has consequently made the idea of nuclear proliferation that much more of a distressing issue with the fear of mass annihilation perpetrated by non-state actors. This does not negate the fact that rogue nations desiring a place at the nuclear bargaining table aren't trying their best to obtain nuclear weapons capabilities as a major point of concern. On the contrary, the cooperative efforts between the United States and Russia include dialogue and action to

prevent nuclear proliferation of any kind while establishing the infrastructural safeguards to prevent any such proliferation issues in the future. This cooperative relationship does not always work on a copasetic level; however, both participants see the value in keeping a nonproliferation dialogue open in order to prevent any nuclear proliferation in which all parties would be greatly affected.

Additionally, the current Bush Administration has proposed the Proliferation Security Initiative (PSI) in order to capitalize and globalize some of the Russian-U.S. cooperation. This initiative hopes to coordinate the nations of the world who all have a stake in preventing nuclear proliferation. PSI has the goal of creating a multinational coalition that relies on established laws and codes of the sea and international borders to interdict illicit shipments of nuclear weapons, fissile material, or any nuclear weapons-capabilities. This Proliferation Security Initiative will involve global interaction and involvement.¹

Contained within the body of this thesis are several more examples of cooperation, not only between the United States and Russia, but among the international community. Although the U.S.-Russian cooperation has not always been easy or necessarily effective, it does carry with it the undeniable necessity of continued efforts to prevent nuclear proliferation, especially to those whose intent is not persuasion or dissuasion, but unadulterated terrorism and cold blooded murder.

1. International Nuclear Nonproliferation Regime

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) signed on 1 July 1968 represents the world's single most important multilateral nuclear arms control agreement. The NPT has the largest membership and it remains the most successful exemplar of arms control. Today, with 182 non-nuclear-weapon states (NNWS) and five NPT nuclear-weapon states (NWS), the Treaty's membership stands at 187. The number

¹ John R. Bolton, "The Bush Administration's Nonproliferation Policy: Successes and Future Change," John R. Bolton, under Secretary for Arms Control and International Security: Testimony Before House International Relations Committee, Washington D.C., March 30, 2004, On-line database, available at: <http://www.state.gov/t/us/rm/31029.htm>

of states with large nuclear arsenals has been contained at five. Today, only four states remain non-parties: Cuba, India, Israel, and Pakistan-however, the latter three possesses nuclear weapons.

The NPT remains the only global legally binding instrument committing the NWS to disarm, and its indefinite extension in 1995 strengthened the global nuclear non-proliferation norm. Responding to the most significant challenges to the NPT to date, i.e. the Indian nuclear detonations of May 1998 and terrorist desire to acquire nuclear capabilities, Canadian Foreign Minister Axworthy stressed that: "The nuclear non-proliferation regime is based on, and anchored in, international law and norms, as well as incorporated into international mechanisms. The NPT is fundamental, but the broader regime is a complex system of multilateral and bilateral agreements, arrangements and mechanisms intended to promote and achieve a world without nuclear weapons, sooner rather than later. This was valid during the Cold War and remains valid today. At the same time, the regime is intended to provide a framework to enable the world to make effective use of nuclear capability for peaceful purposes." Furthermore, the current threat of terrorist acquisition of nuclear capable weapons has provided a myriad of issues for the Nuclear Nonproliferation Regime to ponder while meeting in New York City for the 2005 Nuclear Nonproliferation Treaty review conference. The outcome of this review conference could determine the viability and longevity of a coherent international policy towards nuclear proliferation and consequently directly affect the cooperative endeavors of the United States and Russian and their efforts to globalize these efforts.

On 18 April 2005 at the Geneva Center for Security Policy (GCSP), Ambassador Sergio Duarte (Brazil), President of the Nuclear Non-proliferation Treaty (NPT) 2005 Review Conference spoke at a public meeting on "Nuclear Non-proliferation in the 21st Century: the 2005 Review Conference and Beyond." He stated that the almost universal adherence to the NPT is due to a balance of commitments, on the one hand, between the non-nuclear State Parties to renounce the acquisition of nuclear weapons without prejudice to the right to develop and use nuclear energy for peaceful purposes, and on the other hand, the nuclear weapon State Parties to achieve nuclear disarmament. "The main obstacles to consensus at the Review Conference do not stem from different interpretations of the central objective of the Treaty, but from the lack of compliance on

the part of the nuclear weapon State Parties.”² In addition, there exists further doubts about the efficiency of safeguard systems provided by the Nuclear Nonproliferation Treaty after the discovery of a secret weapons program in Iraq and Libya in the early 1990s, and more recently, North Korea's withdrawal from the NPT, Iran's advanced nuclear program, and Al-Qaeda's attempts to acquire nuclear weapons. However, this Treaty is still considered an indispensable centerpiece of non-proliferation and is conceivably the most valuable instrument to promote nuclear disarmament. This treaty helps to coordinate the many other arms control and threat reduction initiatives via its precepts, articles of compliance, and through the sheer numbers of those nations who are signed participants. “Ambassador Duarte urged State Parties to come forward with compromises if they do not wish to risk a blow to the international system of peace and security. The main substantive issues before the Review Conference will include: the reaffirmation of the “13 steps” and the “unequivocal undertaking”, agreed on in 2000, in order to achieve a total elimination of the nuclear arsenal; the difficult equilibrium of non-proliferation and the right to develop and use nuclear energy for peaceful purposes; the adoption of measures to increase accountability and transparency; the reactivation of the Conference on Disarmament; the entry into force of the Comprehensive Test-Ban Treaty; the preparation of effective, legally binding agreements on negative security assurances; and the prevention of non-state actors acquiring nuclear material.”³

There have been mixed reviews and analysis about this NPT Conference Review. “While often tumultuous, previous NPT Review Conferences have enjoyed varying degrees of success. In the context of the upcoming debate, it is important to note that the most successful sessions have been products of balance—balance in addressing all three pillars of the treaty: nonproliferation, peaceful sharing of nuclear technology, and disarmament. The treaty has emerged strongest when all states have acknowledged the challenges to all three pillars and have made difficult compromises to address each of those challenges. As the President of this year’s Review Conference, Sergio Duarte of Brazil, has stated, we cannot “give exclusive weight to one of the elements to the

² A Public Discussion with Ambassador Sergio Duarte, *Nuclear Nonproliferation in the 21st Century: The 2005 NPT Review Conference and Beyond*, Online database, available at: <http://www.gcsp.ch/e/meetings/Events/Public-Disc/2005/Duarte19.04/Duarte-summary.htm>

³ Ibid.

detriment of the others.” Sometimes that strengthening has come in the form of a final consensus document as in 2000. Other times, it has come as a statement of principles and objectives as in 1995 at what is considered the most successful NPT Review Conference ever. The debate in New York will inevitably be framed by the three pillars, and will center around the six blows recently absorbed by the treaty, with the delegates searching for agreement on ways in which those challenges can be addressed. The most important development will be to what extent the member-states recognize that Universal Compliance and a balance of obligations must drive their thinking.”⁴

a. *International Atomic Energy Agency (IAEA)*

The IAEA seeks to promote the peaceful use of nuclear energy and to inhibit its use for military purposes. United States President Eisenhower envisioned, in his *Atoms for Peace* speech before the UN General Assembly in 1953, the creation of this international body to control and develop the use of atomic energy. In his *Atoms for Peace* speech, President Eisenhower stated, ““It is with the book of history, and not with isolated pages, that the United States will ever wish to be identified. My country wants to be constructive, not destructive. It wants agreement, not wars, among nations. It wants itself to live in freedom, and in the confidence that the people of every other nation enjoy equally the right of choosing their own way of life...To the making of these fateful decisions, the United States pledges before you--and therefore before the world--its determination to help solve the fearful atomic dilemma--to devote its entire heart and mind to find the way by which the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life.”⁵

The IAEA is headquartered in Vienna, Austria (at the Vienna International Centre). The IAEA has 137 member states, whose representatives meet annually for the General Conference to elect 35 members to be included into the Board of Governors. The Board of Governors meets five times a year and is a consensual body which prepares

⁴ Joshua Williams and Jon Wolfsthal, *The NPT at 35: A Crisis of Compliance or a Crisis of Confidence?* This piece was originally published as a policy brief by the United Nations Association of the United States of America(UNA-USA). Online database, available at: <http://www.carnegieendowment.org/publications/index.cfm?fa=view&id=16850>

⁵ Dwight D. Eisenhower, *Atoms for Peace*, This address was given by Dwight D. Eisenhower before the General Assembly of the United Nations on Peaceful Uses of Atomic Energy, New York City, December 8, 1953, Online database, available at: <http://www.eisenhower.archives.gov/atoms.htm>

decisions to be made by the General Conference. The IAEA serves as an intergovernmental forum for scientific and technical co-operation in the peaceful use of nuclear technology. The IAEA's programs encourage the development of the peaceful application of nuclear technology, provide international safeguards against its misuse, and facilitate the application of safety measures in its use.

The IAEA has a stake in the cooperative effort between the United States and Russia and continues to foster good will in their attempts at threat reduction and arms control. The IAEA work is based on three pillars akin to the Nuclear Nonproliferation Treaty's three pillars:

1. Promoting Safeguards and Verification
2. Promoting Safety and Security
3. Promoting Science and Technology⁶

Additionally, these three pillars coincide with various aspects, goals, and missions of the Cooperative Threat Reduction program. The IAEA's current work with the former Soviet Union's nuclear complex has been to augment what the CTR program has already in place while working to execute to fruition their three elements in order to effectively reduce the negative effect of nuclear weapons.

2. Proliferation Motives

There are various reasons for nations, rogue states (i.e. North Korea and Iran), and non-state actors (i.e. Al Qaeda) to seek out nuclear capabilities. Some of these reasons are centered on the desire for international credibility, while others are concerned with regional hegemony. Sometimes proliferation has a purely monetary motive; however, most of the time the motivations behind proliferation are a combination of the aforementioned reasons. For the terrorists, most often their desire to attain nuclear weapons is to detonate them in order to maximize casualties. For rogue states, such as North Korea, their desires are more nebulous. Often they desire to attain nuclear capabilities in order to enhance their international credibility while serving to destabilize

⁶ International Atomic Energy Agency, "Pillars of Nuclear Cooperation," Online database, available at: <http://www.iaea.org/OurWork/index.html>

the region in which they reside in order to gain perceived military legitimacy. Rogue states often do this with the goal of affecting regional politics to meet their ends. Unfortunately, there is, all too often, a supplier of nuclear capabilities for those who are demanding. This is precisely why the continued cooperative effort between Russia and the United States has such an important global and regional effect. The successful continued cooperation between the United States and Russia to secure, account for, and dismantle the Russian nuclear complex to include their extensive nuclear “know-how” and vast stockpiles of fissile material will continue to be a mission of utmost importance for the United States and consequently, the world.

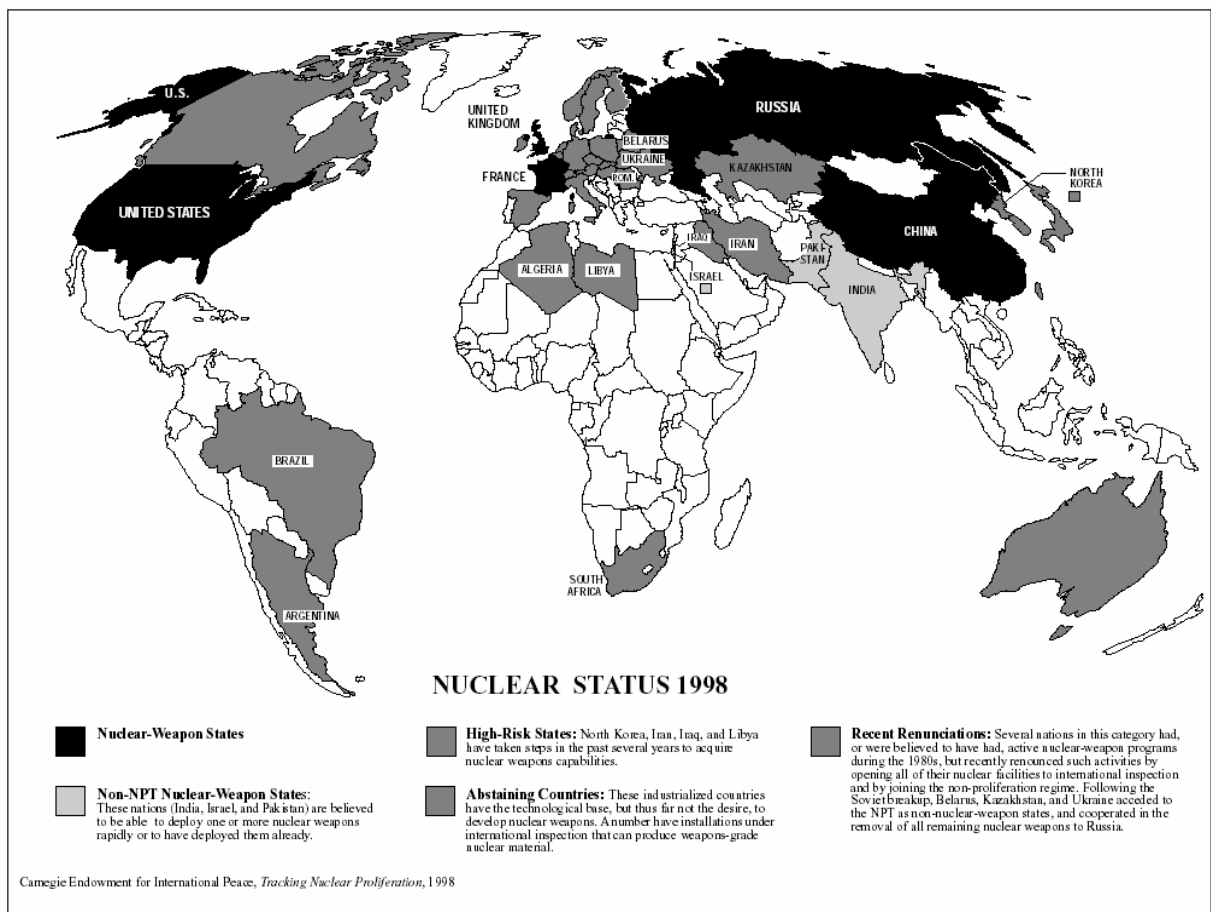


Figure 1. Global Nuclear Status⁷

⁷ Rodney W. Jones and Mark G. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts*, Available online, http://www.carnegieendowment.org/files/Tracking_Ch01map1.pdf

This map portrays the World Nuclear Status as of 1998. It shows the possible perpetrators of nuclear proliferation, as well as the five nuclear weapons states.

This map shows the gradation between the five declared nuclear weapons states (NWS), the many non-nuclear weapons states (NNWS), and the states of concern that are considered to be actively searching for nuclear weapons capabilities. As mentioned, the reasons for nuclear proliferation vary, but as the concept of supply and demand affects market economies, it too, affects the motivation behind nuclear proliferation.

D. CHAPTER-BY-CHAPTER SUMMARY

Chapter I:

The essence of chapter one is the explanation of the validity of this thesis. Furthermore, chapter one provides the major questions and structure of this thesis. There are some broad historical assessments of the U.S.-Russian cooperation and subsequently the international cooperation aspect. Chapter one includes a detailed outline of this thesis.

Chapter II:

Chapter II provides a descriptive account of the many tools and entities that have been devised in order to counter-act nuclear proliferation. This chapter provides a brief synopsis of the major factors that encompass the cooperative effort between Russia and the United States.

Chapter III:

Chapter III is primarily concerned with the assessment of the United States' efforts in coordinating a coherent strategy to combat nuclear proliferation and their many endeavors to maintain a high level of cooperation with Russia and the former nuclear republics of the Soviet Union. The design of this chapter includes a brief historical summary of each cooperative effort followed by an assessment of the current situation. The end of this chapter includes the current Bush Administration's near term goals for strengthening the cooperation between Russia and the United States in order to foster a globalized effort to thwart nuclear proliferation.

Chapter IV:

Chapter IV is the assessment of Russia's attempts at curbing nuclear proliferation. This chapter includes a very detailed, yet brief, accounting of the success or lack thereof, of selected cooperative threat reduction and nuclear nonproliferation programs in Russia. Additionally, chapter five has information gleaned from an interview with Dr. Siegfried Hecker, the former Director of the Los Alamos Nuclear Research Laboratory, regarding his assessment of how effective the United States and Russia are cooperating.

Chapter V:

Chapter V is the conclusion. This chapter is a synthesis of all the information contained herein, and it includes some future plans and possibilities to strengthen U.S.-Russian cooperation and eventually the globalization of a cooperative threat reduction and nuclear nonproliferation program.

E. EXISTING LITERATURE

This topic, comparatively, is quite contemporary; thusly there is a multitude of information and resources available electronically on the internet. Additionally, there are several renowned scholars who have examined the issues surrounding nuclear proliferation and have written books or chapters in books. The U.S. Department of State has an extensive archive of information, resources, speeches, and documents that have been quite useful in my research. On the other hand, researching the cooperative effort between the United States and Russia from the Russian perspective has been so not as easy as the reverse. Locating pertinent and time appropriate sources was difficult, not to mention the possible language barrier. However, I was fortunate enough to attend a symposium held at Stanford University in April 2005 titled, "From Russia with Love: the Post-Soviet U.S. Russian Nuclear Cooperation." This symposium was delivered by Dr. Siegfried Hecker, the former Director of the Los Alamos National Laboratory. I was also able to interview Dr. Hecker a couple of days later to inquire about his insight into the U.S.-Russian cooperation on issues of nuclear nonproliferation from the Russian perspective. The information he provided was quite valuable and featured in chapter five of this thesis. There are not too many book sources for the contemporary nature of this

thesis, and for what books do exist, often chapters of these books exist as articles in topic pertinent publications available on the internet.

The following is a list of internet sites, available books, and articles relating to threat reduction. This is not a comprehensive list, but it will indicate to some degree what I used as resources and what exists for research of this topic. As well, there is a comprehensive bibliography containing the sources used to include several internet sites, books, publications, and an interview I conducted in order to research this very involved topic.

1. Books

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Nuclear Threat Initiative. <http://www.nti.org>

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UNITED STATES AND RUSSIAN COOPERATION ON ISSUES OF NUCLEAR NONPROLIFERATION

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 - b. INTERNATIONAL SCIENCE AND TECHNOLOGY CENTER (ITSC) AND SCIENCE AND TECHNOLOGY CENTER IN UKRAINE (STCU)
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II. NUCLEAR NONPROLIFERATION: UNITED STATES AND RUSSIAN COOPERATION

A. INTRODUCTION

The safety, security, and accountability of nuclear weapons in the republics of the former Soviet Union have been cause for increasing concerns for the security of the United States, as well, for the security of Russia since the break up of the Soviet Union in December 1991. The issue of nuclear nonproliferation has become a cornerstone of diplomacy, aid, and cooperation between the four nuclear-capable republics of the former Soviet Union and the United States. The current cooperation between the United States, Russia, Ukraine, Belarus, and Kazakhstan on issues of nuclear nonproliferation and the security of weapons facilities and fissile material is diverse and continually evolving. Moreover, since the events of September 11, 2001, the need to ensure nuclear weapons and fissile material accountability and security has taken on a more necessary temperament within the boundaries of American-Russian cooperation and equally, on the global scope of nuclear proliferation.

In 1997, retired Russian Gen. Alexander Lebed announced that at the time of the demise of the Soviet Union, Moscow lost track of more than 100 suitcase-sized nuclear weapons.⁸ In *October 2001*, U.S. intelligence sources received a report that terrorists had acquired a 10-kiloton nuclear bomb and were planning to smuggle it into Manhattan.⁹ Auspiciously, both these reports turned out to be false and were deemed to be lacking sufficient evidence but did provide enough concern for the United States government to seriously consider the ramifications of a catastrophic detonation of a nuclear device in a populated center. Furthermore, these events illuminated the frightening reality that, at the time, the U.S. could not dismiss the possibility that these reports were true; such events could indeed happen. The stark reality that the proliferation of nuclear weapons and weapons of mass destruction (WMD) inherently accounts for the possibility that they

⁸ Gen Alexander Lebed: "Small Nuclear Weapons May Be in Wrong Hands." [CNN.com](http://www.cnn.com/WORLD/9710/01/russia.lebed/), October 1, 1997, Online Database, available at: <http://www.cnn.com/WORLD/9710/01/russia.lebed/>

⁹ Mathew Bunn, Anthony Weir, and John Holdren, *Controlling Nuclear Warheads and Materials*, (Washington, DC: Nuclear Threat Initiative and the Project on Managing the Atom, Harvard University, March 2003), pp. 18.

might fall into the hands of a terrorist groups with the intent to detonate such a weapon in a densely populated area. This would undoubtedly have a catastrophic effect. However, the international community has acknowledged this insidious threat, and in particular, the United States and Russia have blazed a clear path of cooperation in order to prevent such a terrorist threat from materializing while effectively securing, accounting for, and dismantling the former Soviet nuclear arsenal.

There have been several arms control, threat reduction, and nonproliferation measures that have been established since the inception of nuclear weapons. Furthermore, there have been significant advances in cooperation among many of the integral nuclear capable nations since the breakup of the Soviet Union. The intense concern with the general lack of command and control over the former Soviet Union's nuclear weapons arsenal, the fissile material that was left behind after the Soviet Union's breakup, and the technical expertise of the Soviet scientists all combine to create a precarious and possibly volatile global circumstance. This circumstance has provided more than sufficient impetus for the concerned nations of the world, and in particular the United States, Russia, Ukraine, Belarus, and Kazakhstan, to cooperate to eliminate the threat of nuclear weapons proliferation and, consequently, augment their own national security.

B. COOPERATIVE THREAT REDUCTION (CTR) PROGRAM

The U.S. Congress established the Nunn-Lugar Cooperative Threat Reduction (CTR) Program in November 1991 to address the growing concern with the crumbling state of the Soviet Union and its inability to effectively control its nuclear arsenal and all associated material. "A failed coup in Moscow in August 1991 and the subsequent disintegration of the Soviet Union ... raised concerns about the safety and security of Soviet nuclear weapons."¹⁰ The goal of the Cooperative Threat Reduction (CTR) Program is to assist the states of the former Soviet Union in controlling and protecting their nuclear weapons, weapons-usable materials, and delivery systems. Furthermore, to aid in the implementation of several arms control agreements, CTR also contributes to the dismantling and destruction of a number of nuclear weapons and their associated delivery systems. "In the 1990s, the U.S. Congress initially allocated from the defense budget

¹⁰ Amy F. Woolf, "Nunn-Lugar Cooperative Threat Reduction Programs: Issues for Congress," CRS Report for Congress, On-line Database, available at: <http://www.fas.org/spp/starwars/crs/97-1027.pdf>

approximately \$400 million each year to CTR-related programs; which are now administered by the Department of Defense (DOD), Department of Energy (DOE), Department of Commerce, and the Department of State. From 2000-2010, the United States will spend a projected \$1 billion per year on the program. Projects of the Cooperative Threat Reduction Program have included strategic offensive arms elimination; nuclear warhead dismantlement; nuclear weapons storage security; chemical weapons destruction; biological weapons proliferation prevention; reactor core conversions; nuclear material protection, control and accounting; export control initiatives, and defense conversions.”¹¹ The current funding for the Cooperative Threat Reduction program as provided for by the United States Congress is depicted in the following table:

| Fiscal Year | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---------------------------|-------------|-------------|---------------------------------------|-------------|-------------|-------------|-------------|
| Request | \$400 | \$400 | \$400 | \$400 | \$371 | \$328 | \$382.2 |
| Auth. | \$400 | \$400 | \$400 | \$400 | \$300 | \$364.9 | \$382.2 |
| Fiscal Year | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| Request | \$440.4 | \$475.5 | \$458.4 | \$403 | \$416.7 | \$450.8 | \$409.2 |
| Auth. | \$440.4 | \$475.5 | \$443.4 | \$403 | \$416.7 | \$450.8 | \$409.2 |
| Request FY2006: \$415.5 | | | Total Request FY1992-FY2006: \$6150.5 | | | | |
| Total Auth. FY1992-FY2005 | | | \$5,686 | | | | |

Table 1. CTR Funding: Requests and Authorization (\$ millions)¹²

What is not related clearly in this table is the transference of the Material Protection Control and Accounting to the Department of Energy’s budget and its removal from the Department of Defense’s budget in fiscal year 2001. Additionally, the Department of State began to incorporate certain aspects of the Cooperative Threat Reduction program into its budget which in turn allowed for more total money to be

¹¹ Nuclear Threat Initiative (NTI), “The Nunn-Lugar Cooperative Threat Reduction (CTR) Program, An Overview, On-line Database, available at: http://www.nti.org/db/nisprofs/russia/forasst/nunn_lug/overview.htm

¹² Amy F. Wolff, “Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union,” CRS Report for Congress, code RL31957, updated 15 April 2005.

budgeted for the CTR program with the Department of Defense not having sole fiscal responsibility. Funding from the State Department and the Department of Energy has increased yearly as they fully incorporate their particular CTR aspects into their budgeting fold.

The Nunn-Lugar Cooperative Threat Reduction (CTR) Program is named for Senators Sam Nunn [D-GA] and Richard Lugar [R-IN]) and began in 1991 as a piece of US legislation entitled "The Soviet Nuclear Threat Reduction Act of 1991." "This initiative stemmed from the Soviet head of state, Mikhail Gorbachev's request for assistance in dismantling Soviet nuclear weapons, and U.S. President George Bush's subsequent proposal to assist in the implementation of control, dismantlement, and destruction of nuclear weapons in the Soviet Union. In the Soviet Nuclear Threat Reduction Act, Congress noted that aid to the Soviet Union and its potential successor states would be in the national security interest of the United States as a means to address the threat of nuclear weapons proliferation."¹³

In October 1993, the Nunn-Lugar initiative became the "Cooperative Threat Reduction Act of 1993" and established these five criteria:

1. Warhead removal from Soviet Successor States to Russia.
2. Destruction and dismantlement of weapons systems.
3. Chain of custody projects.
4. Chemical Weapons destruction assistance.
5. Demilitarization support.¹⁴

The CTR Program has evolved in three phases. The first phase, from 1992-93, established the program, developed a practicable framework, and began early assistance to the Newly Independent States (NIS). Stage two, from 1994-95, implemented agreements, developed a management structure, and devised an acquisition strategy. Stage three began in 1996 and was planned as a "multi-year strategy" in order to

¹³ F. Wolff, "Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union," CRS Report for Congress, code RL31957, updated 15 April 2005..

¹⁴ "Cooperative Threat Reduction Act of 1993," National Defense Authorization Act FY1994, H.R. 2401, 10 November 1993, pp. 238-244. On-line database, available at: http://frwebgate.access.gpo.gov/cgi-bin/useftp.cgi?IPaddress=162.140.64.45&filename=h2401enr.pdf&directory=/disk3/wais/data/103_cong_bills

complete the stated agreements. In FY96 changes in structural framework and stricter oversight and funding responsibilities were recommended. The resulting effect was that the Department of Energy (DoE) would take control of the “material control and accounting” projects, the State Department would handle all the International Science and Technology (ISTC) programs, and the Department of Commerce (DoC) would coordinate export control issues.¹⁵

The Cooperative Threat Reduction program has essentially three distinct projects that define the CTR’s goals of securing, accounting, and dismantling the former Soviet nuclear weapons. These three projects are: chain of custody, destruction and dismantling, and demilitarization.

1. Chain of Custody

“Chain of custody activities are those designed to enhance safety, security, and control over nuclear weapons and fissile material.”¹⁶ The issues that chain of custody is most interested in are: transportation security, weapons storage security, and fissile materials storage security. After the breakup of the Soviet Union there were thousands of nuclear weapons spread among a few of the Newly Independent States (NIS): Belarus, Kazakhstan, Russia, and Ukraine. Through the Cooperative Threat Reduction program, Russian and U.S. cooperation has allowed the United States to aid Russia in transporting these weapons from the NIS by providing funding, armored blankets to protect the weapons from attack, storage containers to hold weapons during transit, and assistance to help secure roadways and trains for transportation. There are several CTR projects that are designed to aid Russia in improving weapons storage security. This includes U.S. DoD providing perimeter fencing, security upgrades at railway transfer points and ultimate storage facilities, and extensive accounting practices for the entire transportation evolution. Between FY1995 and FY2004, DoD appropriated around \$450 million for weapons storage security.¹⁷ “According to unclassified estimates, Russia inherited more

¹⁵ CTR Forecast to Industry, 2/96; and “Nunn-Lugar programs being Moved to DoE, Commerce, State Department,” *Post-Soviet Nuclear and Defense Monitor*, 14 March 1995, pp. 4.

¹⁶ Amy F. Woolf, “Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union,” CRS Report for Congress, 12 January 2005, pp. 11, On-line Database, available at: <http://www.fas.org/spp/starwars/crs/97-1027.pdf>

than 30,000 nuclear warheads from the Soviet Union, along with enough plutonium and highly enriched uranium (HEU) to produce thousands more warheads.”¹⁸ This created a problem when these weapons were broken down. The CTR has implemented several precautions to safeguard fissile material storages. The United States has provided more than 26,000 containers to hold fissile material; U.S. has helped Russia to build a highly secure storage facility at Mayak which was designed to house over 25,000 containers which is the equivalent to 25,000 warheads.¹⁹ This cooperative effort currently continues and allows the United States to continue aiding Russia as they seek ways to bolster accountability, security, and ultimately dismantlement of the inherited nuclear arsenal.

The following tables highlight the budgeted money for transportation security (Table 2) and fissile material storage (Table 3).

| Project | Fiscal Years | Total Appropriation |
|---------------------------------|---------------|---------------------|
| Armored Blankets | FY1992-FY1993 | \$3.1 |
| Emergency Response | FY1992-FY1996 | \$29.2 |
| Railcar security enhancements | FY1992-FY1994 | \$21.5 |
| Weapons Transportation Security | FY1995-FY2005 | \$152 |

Source: *Controlling Nuclear Warheads and Materials: A Report Card and Action Plan*, by Matthew Bunn, et al. Project on Managing the Atom. March 2003.

Table 2. CTR Funding for Transportation Security (\$ millions)²⁰

¹⁷ Matthew Bunn, et al., *Controlling Nuclear Warheads and Materials: A Report Card and Action Plan*, Project on Managing the Atom, 4 March 2003.

¹⁸ Amy F. Woolf, “Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union,” CRS Report for Congress, 12 January 2005, pp. 14, On-line Database, available at: <http://www.fas.org/spp/starwars/crs/97-1027.pdf>

¹⁹ U.S. Senate. Committee on Armed Services. Cooperative Threat Reduction Program, Testimony of Lisa Bronson, Deputy Undersecretary of Defense for Technology Security Policy and Counterproliferation, 10 March 2004

²⁰ Matthew Bunn, et al., *Controlling Nuclear Warheads and Materials: A Report Card and Action Plan*, Project on Managing the Atom, 4 March 2003.

| Project | Fiscal Years | Total Appropriation |
|-------------------------------|---------------|---------------------|
| Fissile Material Containers | FY1992-FY2000 | \$82.2 |
| Storage Facility Design | FY1993 | \$15 |
| Storage Facility Construction | FY1994-FY2001 | \$387 |

Table 3. CTR Funding for Fissile Material Storage (\$ millions)²¹

There has been a significant amount of funding provided for these programs over the course of the Cooperative Threat Reduction program. However, there are some differing opinions concerning the near term budgeting for the various entities of the Cooperative Threat Reduction program. For example, Brian Debose, a journalist for the Washington Times newspaper, stated in February 2005 that “Democrats were also concerned \$46 million would be cut from the Cooperative Threat Reduction program to find and secure nuclear arms material.”²² Furthermore, the “administration’s 2005 budget requested only \$919 million for Nunn-Lugar Cooperative Threat Reduction programs to carry out this important work [dismantling nuclear weapons and securing or destroying nuclear weapons material], \$72 million less than the year before. By contrast, the administration is still lavishing \$10 billion per year on a missile defense program that couldn’t even get an interceptor missile out of its silo in a test in early December.”²³

2. Destruction, Dismantlement, and Demilitarization

“When the Soviet Union collapsed in 1991, it had more than 11,000 warheads deployed on nearly 1,400 ICBMs, 940 SLBMs, and 162 heavy bombers. According to the Defense Threat Reduction Agency, as of July 2004, CTR has helped to deactivate more

²¹ Amy F. Wolff, “Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union,” CRS Report for Congress, code RL31957, updated 15 April 2005.

²² Brian Debose, “Big Cuts expected in Bush’s 2006 budget Blueprint,” The Washington Times, 7 February 2005, Accessed via LexisNexis 27 April 2005.

²³ Michelle Ciarrocca and William D. Hartung, “Cuts May Stop Bush from Invading Iran,” The Seattle Post-Intelligencer, 9 February 2005, Accessed via LexisNexis 27 April 2005.

than 6,300 warheads, 539 ICBMs, 496 SLBMs, and 130 heavy bombers.”²⁴ The U.S. has provided crucial aid to Russia, Belarus, Kazakhstan, and Ukraine in order to eliminate strategic offensive arms. By means of this aid, Belarus and Kazakhstan are free of the infrastructures and launchers associated with strategic nuclear weapons. The U.S. is still working with Russia and Ukraine in helping to dismantle and demilitarize their strategic arsenal.

The current issues for the party nations are centered on meeting agreement goals, but include maintaining access, transparency, and increasing the global effort in internationalizing this cooperation. The U.S. congress has noted that the “primary barrier to successful implementation remains the need to gain access and transparency from officials in the recipient nations, particularly Russia.”²⁵ Although Russia has made the process of securing weapons storages difficult and has interests in protecting its secret details about its nuclear weapons program, the United States does not have a “systematic approach to identifying and addressing these problems.”²⁶ This issue may be the basis for an impasse in this cooperative effort and, furthermore, may hinder the future successful execution of the Cooperative Threat Reduction program and all the other threat reduction, arms elimination, and global nuclear nonproliferation prevention programs.

“There is near-universal agreement, both within the Bush Administration and among analysts outside the U.S. government, that the potential proliferation of weapons of mass destruction to rogue nations or terrorist groups presents a global problem that requires an international response.”²⁷ Understanding that the nuclear legacy of the former Soviet Union has created the largest and most immediate threat is keenly important, however, to get fixated on the notion that the Soviet legacy is the only real threat and that

²⁴ Amy F. Woolf, “Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union,” CRS Report for Congress, 12 January 2005, pp. 14, On-line Database, available at: <http://www.fas.org/spp/starwars/crs/97-1027.pdf>

²⁵ Ibid, pp. 39.

²⁶ “Reshaping U.S.-Russian Threat Reduction: New Approaches for the Second Decade,” Carnegie Endowment for International Peace and Russian American Nuclear Security Advisory Council, November 2002, pp. 4.

²⁷ Amy F. Woolf, “Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union,” CRS Report for Congress, 12 January 2005, pp. 44. On-line Database, available at: <http://www.fas.org/spp/starwars/crs/97-1027.pdf>

the United States is the only nation with a vested interest would be naïve.²⁸ There are three major characteristics of proposals for the internationalization of threat reduction and nonproliferation assistance:

1. The G-8 Global Partnership Against Weapons of Mass Destruction is a movement to expand the list of donors to threat reduction and nonproliferation assistance programs.
 - This partnership involves the G-8 nations in a financial obligation over the next ten years for threat reduction and nonproliferation assistance initially in Russia; however, extending this obligation to other nations is planned once guidelines are refined and adopted.
2. Extending the Cooperative Threat Reduction program beyond the former Soviet Union
 - There is a debate in the U.S. Congress on the efficacy of extending CTR to other nations. Supporters believe that the U.S. could apply the model of CTR that has been developed over the past 14 years to other nations that may pose a risk of nuclear proliferation by helping to secure and eliminate weapons or material that may prove to be attractive to terrorists. Detractors claim that nations might not be willing to allow the United States access to their facilities, and furthermore, those who question extending CTR raise the issue of whether it is legal to do so under U.S. and international law for nations who are not parties to the Nuclear Nonproliferation Treaty (NPT) (i.e. Israel, Pakistan, and India).²⁹

²⁸ According to former Senator Sam Nunn, “some 20 tons of civilian HEU (highly enriched uranium) exists at 345 civilian research facilities in 58 countries, yet there are no international standards for securing these nuclear materials within a country.” Sam Nunn, Co-chairman of the Nuclear Threat Initiative. *Reducing the Threats from Weapons of Mass Destruction and building a Global Coalition Against Catastrophic Terrorism*. Moscow, Russia. 27 May 2002.

²⁹ Sharon Squassoni, “Nuclear Threat Reduction Measures for India and Pakistan,” CRS Report for Congress(CRS RL31589), 5 May 2003

3. Global Recognition of National Responsibility.

- The goal with this approach is not necessarily more appropriations for threat reduction and nonproliferation assistance, but rather a global awareness for other nations who may have Weapons of Mass Destruction (WMD). This approach encompasses the possible shift from the original concern being nuclear proliferation by means of loss of control and lack of security to concerns over the potential acquisition of WMDs by terrorist. The hope is for a “growing sense of global cooperation in identifying and addressing weaknesses in a greater number of countries.”³⁰

The Nunn-Lugar Cooperative Threat Reduction (CTR) Program has many facets that make it a viable option for U.S.-Russian cooperation on issues of nuclear nonproliferation; however, there are some that question the CTR’s efficacy in enhancing the U.S. and/or Russian national security. These critics highlight the many other treaties and agreements that have been established to effectively control, secure, and eventually eliminate nuclear weapons. Those treaties are considered to be part of an International Nuclear Nonproliferation Regime that is comprised of several nations. Some of the treaties associated with the International Nuclear Nonproliferation Regime are:

Nuclear Nonproliferation Treaty (NPT); Strategic Arms Reduction Treaties (START I/II/III); Strategic Offensive Reduction Treaty (SORT); Anti-Ballistic Missile (ABM) Treaty; Comprehensive Test Ban Treaty (CTBT); and Proliferation Security Initiative (PSI).

Through the implementation of these treaties and agreements there has been significant gains in reducing the nuclear threat, however, the issue of nuclear proliferation regarding terrorists’ acquisition of such weapons is a serious concern that has been directly attended to via the Cooperative Threat Reduction Program. However, it is important to note that the interaction of all these aforementioned treaties and agreements

³⁰ Amy F. Woolf, “Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union,” CRS Report for Congress, 12 January 2005, pp. 48. On-line Database, available at: <http://www.fas.org/spp/starwars/crs/97-1027.pdf>

work in concert to eventually eliminate the concept of nuclear proliferation on a global scale.

C. NUCLEAR NONPROLIFERATION TREATY (NPT)

The United States has long been the leader of an “international regime that attempts to restrain the spread of nuclear weapons. The centerpiece of this regime is the Nuclear Nonproliferation Treaty (NPT), which entered into force in 1970; it was extended indefinitely in 1995.”³¹ The NPT requires that the five nuclear weapons states, Russia, United States, China, Britain, and France, be the leaders in banning the acquisition and transfer of nuclear weapons in the international arena. There are currently 190 signatories to the NPT. India and Pakistan remain outside the Treaty and Israel has maintained a high level of secrecy concerning their nuclear capabilities, although it is widely known that they have nuclear weapons. North Korea joined the NPT in 1985, but in January 2003 announced its intention to withdraw from the Treaty.³² Several countries, including Brazil, Argentina, and South Africa suspended their nuclear programs and joined the NPT in the 1960s. Belarus, Kazakhstan, and Ukraine handed over their nuclear weapons, which were remnants of the Soviet Union, to Russia and joined the NPT in the 1990s. This action in collaboration with the CTR Program has removed a significant amount of nuclear capabilities from these former Soviet Republics and prevented the post 1989-90 collapsed command and control structures from allowing these weapons to fall into the hands of terrorist group(s) or rogue state(s).

Nations that signed onto the NPT as non-nuclear weapon states (NNWS) pledged not to pursue nuclear weapons in exchange for a pledge by the nuclear weapons states (NWS) not to assist in the development of nuclear weapons with any NNWS and to facilitate “the fullest possible exchange of equipment, materials, and scientific and technological information for the peaceful uses of nuclear energy.”³³

³¹ Amy F. Woolf, “Arms Control and Nonproliferation Activities: A Catalog of Recent Events,” CRS Report for Congress (CRS RL30033), 7 January 2005, pp. 39.

³² U.S. Department of State, “Treaty on the Non-proliferation of Nuclear Weapons,” Bureau of Nonproliferation, Online database, available at: <http://www.state.gov/t/np/trty/16281.htm>

³³ Nuclear Nonproliferation Treaty, Article IV-2.

Although the NPT has made successful gains in the former Soviet Union, many regional issues have emerged that are cause for great concern. North Korea, a former signatory to the NPT renounced its support and continued its pursuit of nuclear weapons in defiance of the treaty. Iran, an NPT signatory, is suspected of pursuing nuclear weapons technology. “The tension between India and Pakistan is made more dangerous by their possession of nuclear explosives. There is concern about Chinese and Russian activities that may encourage proliferation in other regions.”³⁴ Although these regional concerns are tended to by the International Nuclear Nonproliferation Regime, the reality of a rogue state (in the case of North Korea and Iran) and the possible acquisition of nuclear weapons and/or weapons-useable material via the Pakistani “AQ Kahn network” are very real situations and further exemplify the need for continued cooperation between Russia and the United States to prevent any transference of information, material, and technical expertise to such situations.

A major illustration of the failure of the International Nuclear Nonproliferation Regime to prevent the spreading of information and materials has been epitomized by the AQ Khan Nuclear Proliferation Network. “During the 1990s, there were intermittent clues from intelligence [agencies] that AQ Khan was discussing the sale of nuclear technology to countries of concern. By early 2000, intelligence revealed that these were not isolated incidents. It became clear that Khan was at the centre of an international proliferation network. By April 2000, the UK Joint Intelligence Committee (JIC) was noting that there was an evolving, and as yet incomplete, picture of the supply of uranium enrichment equipment to at least one customer in the Middle East, thought to be Libya, and evidence linking this activity to Khan.”³⁵ AQ Khan’s “nuclear” aid to Iran, Libya, and North Korea has been well documented and further supports the need for continued cooperation in the international community with Russia and the United States providing leadership and exercising pressure where needed.

³⁴ Amy F. Woolf, “Arms Control and Nonproliferation Activities: A Catalog of Recent Events,” CRS Report for Congress (CRS RL30033), 7 January 2005, pp. 39.

³⁵ “A.Q. Kahn,” Global Security.org, On-line database, available at: <http://www.globalsecurity.org/wmd/world/pakistan/khan.htm>

D. STRATEGIC ARMS REDUCTION TREATIES (START I/II)

The goal of preventing nuclear proliferation by means of cooperation between Russia and the U.S. has another element that may not be as apparently nonproliferation oriented, but remains a cornerstone to the cooperation effort and has some viable effects regarding the prevention of nuclear proliferation. One example of this cooperation and the effecting arms reduction is the Strategic Arms Reduction Treaty (START I, a.k.a.: The Lisbon Protocol). The START I was signed 1 July 1991 by Russia and the United States. It was originally designed to have a 15 year duration, but at the Helsinki Summit in 1997, Presidents Clinton and Yeltsin tried to reach an agreement to extend the duration indefinitely. However, that has yet to be completely negotiated. “The treaty limits the total number of strategic nuclear delivery vehicles for United States and Russia to 1,600 each, the total number of accountable warheads to 6,000 each, total number of warheads mounted on ballistic missiles (ICBMs and SLBMs) to 4,900 each, and the total number of warheads mounted on mobile ICBMs to 1,100 each.”³⁶ Additionally, the START I Treaty contained extensive provisions for oversight and monitoring. After the breakup of the Soviet Union in December 1991, the START I Treaty obligated the nuclear-capable Soviet republics; Ukraine, Belarus, and Kazakhstan to accede to the Nuclear Nonproliferation Treaty (NPT) as non-nuclear weapon states after removing all nuclear capabilities from their borders. This effectively made Russia the only nuclear state left over from the Soviet Union.

The START II Treaty is primarily an extension of the START I, however, there are some further restrictions to the number of nuclear weapons either side can have. For example, “START II establishes a limit on strategic weapons for each party, with reductions to be implemented in two phases. By the end of Phase I, the United States and Russia are to reduce their total deployed strategic nuclear warheads to 3,800-4,250, including no more than 2,160 warheads deployed on SLBMs, no more than 650 on heavy ICBMs, and no more than 1700-1750 on SLBMs. By the end of Phase II, each party's

³⁶ Strategic Arms Reduction Treaty , *START I Overview*, Online database, available at: <http://www.nti.org/db/nisprofs/russia/treaties/s1descr.htm>

total number of deployed strategic nuclear warheads may not exceed 3,000-3,500. Of this number, no more than 1,700-1,750 may be deployed on SLBMs.”³⁷

The START Treaties further emphasize the desire of all parties to maintain a healthy cooperation in the effort to reduce nuclear arms while effectively acting to prevent nuclear proliferation in a regional as well as on a global level. Another such tool that has been negotiated and enacted is the Strategic Offensive Reduction Treaty (SORT).

E. STRATEGIC OFFENSIVE REDUCTION TREATY (SORT)

The Strategic Offensive Reduction Treaty (SORT) is also known as the Moscow Treaty. It was signed by both Russia and the United States in Moscow on 24 May 2002. This treaty obligates the United States and the Russian Federation to reduce the total number of deployed strategic nuclear warheads to a level not to exceed 1,700-2,200 for each nation. In contrast to earlier strategic arms control treaties (START I & II), it places no restrictions on the composition of individual components of Russian and American nuclear triads, with the exception of reaffirming the restrictions introduced in the START I treaty. The treaty also does not require either country to eliminate any nuclear warheads or delivery vehicles, and introduces no new verification provisions beyond that already in existence with the START treaties. SORT is to remain in force until 31 December 2012, but can be extended if both nations agree. The SORT, much like the START treaties is another affirmation of the Russian-American cooperation in reducing the global effect of nuclear weapons. Although this formalized function for reduction does not explicitly address nuclear nonproliferation, it inherently provides the safeguards necessary to prevent material and weapons from falling into the wrong hands. Additionally, it provides another example of the importance of reducing nuclear warheads in order to comply with Article VI of the Nuclear Nonproliferation Treaty.

F. PROLIFERATION SECURITY INITIATIVE (PSI)

The Proliferation Security Initiative (PSI) is a product of the current Bush Administration. PSI works primarily as a diplomatic tool that the “United States has used to gain support for interdicting shipments of weapons of mass destruction-related (WMD)

³⁷ Strategic Arms Reduction Treaty, *START II Overview*, On-line database, available at: <http://www.nti.org/db/nisprofs/russia/treaties/s2descr.htm>

equipment and materials.”³⁸ The Bush Administration has emphasized that PSI is an activity rather than an organization. This amorphous activity is well suited for the rapid and often changing issue concerning nuclear proliferation. Currently there are 16 nations that have pledged their support. These “core members” agreed in Paris 2003 to accept a set of interdicting principles. The goal of these principles is to “create a web of counterproliferation partnerships through which proliferators will have difficulty carrying out their trade in WMD and missile-related technology.” Due in part to the PSI, the United Nations Security Council, in April of 2004, adopted UNSC Resolution 1540, which effectively required all states to criminalize proliferation, enact strict export controls and secure all sensitive materials within their borders.³⁹ The ultimate goal of PSI is to foster global coordination to prevent nuclear proliferation. A major aspect to this effort is the Russian-U.S. relationship and the perception that this relationship carries globally. The more validity this initiative can garner, the more effective it will become.

G. CONCLUSION

Cooperation between Russia and the United States has been a very important aspect to the global effort of preventing nuclear proliferation. Furthermore, the many established agreements and treaties offer a solid foundation from which future cooperation can be fostered in good faith. Although there are some incongruent approaches, the overall goal of nuclear nonproliferation remains a major issue for Russia and the United States.

The Cooperative Threat Reduction (CTR) Program is the current benchmark of Russian-American cooperation. The necessity in 1991 for oversight, aid, and cooperation with and for the republics of the collapsing Soviet Union has paid major dividends, especially in the wake of the events of September 11, 2001. The reality that the paradigm of the traditional nuclear threat has shifted to one of much more sinister and insidious execution has been a natural transition for the safeguards and protocols of the CTR. Moreover, the CTR works in coordination with many other treaties and agreements that

³⁸ Amy F. Woolf, “Arms Control and Nonproliferation Activities: A Catalog of Recent Events,” CRS Report for Congress (CRS RL30033), 7 January 2005, pp. 62.

³⁹ Proliferation Security Initiative, On-line database, available at: <http://www.state.gov/t/np/rls/other/34726.htm>

not only work to prevent nuclear proliferation, but actively implement established means to reduce global nuclear weapons numbers while increasing the security, accounting, dismantlement, and demilitarization of such weapons. The Nuclear Nonproliferation Treaty, the Strategic Arms Reduction Treaties, the Strategic Offensive Reduction Treaty, and the Proliferation Security Initiative are great examples of the means by which Russia and the United States have fostered cooperation, not only with each other, but expanding cooperation to include the international community. Russian-American cooperation on issues of nuclear nonproliferation is a valuable exercise in strengthening each other's national security while effectively reducing the potentially catastrophic effects of nuclear proliferation, especially in the post 9/11 era.

III. ASSESSMENT OF THE UNITED STATES' STRATEGY AND COOPERATION ON ISSUES OF NUCLEAR NONPROLIFERATION

A. INTRODUCTION

The United States is an active and leading member in a transnational organization called the Nuclear Nonproliferation Regime. This regime is comprised of the members in the international community to include many individual states. The regime's main goal is to prevent the spread of nuclear weapons and their worldwide effect through strategic deterrence of the availability and proliferation of nuclear weapons to states and non-state actors. The Nuclear Nonproliferation Regime is comprised of and exercises its control via a range of laws, treaties, and agreements. The main facet of the nonproliferation movement has been the "Nuclear Nonproliferation Treaty (NPT). Under the terms of the NPT, the five declared nuclear weapons states — the United States, the United Kingdom, Russia, France and China — agreed "not in any way to assist" any non-weapons state to acquire nuclear weapons. They also agreed to reduce and eventually eliminate their own nuclear arsenals. Non-weapons states agreed not to develop nuclear weapons and to allow the International Atomic Energy Agency (IAEA) to inspect their nuclear facilities and materials to ensure that peaceful nuclear technology is not diverted to military purposes."⁴⁰ Non-weapon states, via the NPT, are also guaranteed access to peaceful nuclear technology. "Since the end of the Cold War, participation in the NPT has been almost universal; except for India and Pakistan, whose pursuit of nuclear weapons capabilities combined with the 1998 tests of nuclear explosives comprise a principal nonproliferation concern, only Israel has not signed the NPT."⁴¹ However, with the surprising and tragic events of September 11, 2001, a new feature of nuclear nonproliferation has emerged as a significant issue to be dealt with by the Nuclear Nonproliferation Regime. The United States has taken the international lead in many respects concerning the prevention of terrorists from obtaining weapons of mass destruction (primarily nuclear in this case) and have acted with a sense of urgency to

⁴⁰ Carl E. Behrens, "Nuclear Nonproliferation Issues," CRS Issue Brief for Congress, Updated: 21 June 2004, pp. 2.

⁴¹ Ibid.

keep non-nuclear states from making the transition to nuclear capable. Each previous presidential administration has left an indelible mark in the realm of nonproliferation, however, the Bush Administration's achievements in nuclear nonproliferation and the events of September 11th may be the most significant due to the gravity of possibly having to deal with non-state actors with nuclear capabilities and embracing nations who desire to be nuclear capable.

The terrible attacks that occurred on 9/11 have emphasized some very significant aspects regarding the Nuclear Nonproliferation Regime and their primary concern being terrorists' acquisition of a nuclear weapon and the subsequent detonation of same in a populated area. Currently, one of the main goals of the Nuclear Nonproliferation Regime is to prevent such an occurrence. This is not to forsake the many other important issues concerning nonproliferation. There are a multitude of imperative issues surrounding the concept of nonproliferation; for example, regional issues such as the Democratic Republic of Korea's (North Korea) attempts to weaponize fissile material; the Iranian attempt to jump start their nuclear research and development program; and the continuing Pakistani/Indian conflict, which has become even more tenuous with the introduction of nuclear capabilities by both nations. All these issues are extremely important and are the source of consternation and political wrangling.

The issues surrounding nuclear nonproliferation are extensive, diverse, and tremendously disconcerting. One of the key aspects to the prevention of nuclear proliferation is how the various world leaders address the issue and how successful they are in doing so. The United States has been a constant and leading force in the area of nuclear nonproliferation. There are several measures that encapsulate the success or the attempt to succeed in the prevention of nuclear weapon proliferation. The primary measures that are widely employed in the attempts to prevent nuclear weapons proliferation generally are agreements and treaties. This chapter will focus primarily on the success (or the lack thereof success) the Bush Administration has had with nuclear nonproliferation by analyzing their support and advancement of the Anti-Ballistic Missile Treaty (ABM Treaty), the Comprehensive Test Ban Treaty (CTBT), the Nuclear Non-Proliferation Treaty (NPT), and the Proliferation Security Initiative (PSI). After analyzing the Bush Administrations use and expansion of these four treaties and initiatives we will

have gained a better understanding of how effective this administration has been and how effective they may be in the coming four years.

B. ANTI-BALLISTIC MISSILE TREATY (ABM)

1. History

The Anti-Ballistic Treaty (ABM) was a treaty between the former Soviet Union and the United States concerning limitations on anti-ballistic systems used primarily for defending areas against nuclear warhead ballistic missiles. The particulars of the agreement were such that the limitations placed upon the employment of anti-ballistic missiles were to limit the capability of either nation from providing, utilizing, or developing a nationwide anti-ballistic missile system (ABM). The early history of the US ABM endeavor began in the 1950s when the United States began to develop a series of missiles that had the ability to shoot down incoming Inter-Continental Ballistic Missiles (ICBMs). Since the US had a significant lead in equipment and production of such technology during this period, the determination was that an ABM system could limit the overall catastrophic damage associated with a full scale nuclear exchange. This eventually led to the creation of the North American Air Defense Command (NORAD) in conjunction with Canada. The debate about the feasibility and force posture it presented to the Soviet Union became a focal point in public and political discourse. The concern was that if the system did work, then the Soviet's best course of action would be to immediately launch a full scale attack before the system became completely operational. However, during this debate, the concept of an ABM system became essentially disputable based on the advent of new ICBM technology of the Soviets called the MIRV system. The object of the MIRV ICBMs was to overwhelm any sort of ABM system with sheer numbers. The MIRV system was capable of delivering several nuclear warheads with a single ICBM. The Soviet Union and the United States eventually reached strategic parity in terms of ICBM forces. No longer was the issue of an ABM system a controversial point based on the theory that the USSR would be devastated and the United States would be spared in a nuclear exchange. All these new developments culminated in conceptualization of Mutually Assured Destruction (MAD), in which changes in the nuclear balance had to be carefully weighed and ABMs appeared far too

risky a proposition. It now appeared that having no defense was safer than one that may set off a nuclear war. As resulted of all these happenings, the US and USSR entered into the Anti-Ballistic Missile Treaty. This treaty was agreed to in Moscow in May 1972 and ratified by the US Senate in August 1972. The ABM Treaty was viewed by many as the key agreement on nuclear arms control because it brought to the foreground the implicit notion that nuclear balance need to be maintained because there was now no assurance that either side could consider itself immune from nuclear attack or retaliation.

The ABM Treaty was left undisturbed until the Reagan Administration announced the Strategic Defense Initiative (SDI) in March 1982. Reagan stated that “SDI was consistent with...the ABM Treaty” and he viewed SDI as a defensive system that would help to reduce the possibility of mutually assured destruction becoming a reality.⁴² The Soviet leadership viewed Reagan’s SDI as a possible source for unleashing nuclear war and viewed it as “not just irresponsible... [But] insane.”⁴³ The next major milestone in the lifespan of the ABM Treaty was the fall of the Iron Curtain. After the dissolution of the Soviet Union in December 1991, the solvency of the ABM Treaty was in question and was a topic that received much attention from scholars and politicians alike. Acknowledging the significance of this treaty and what it stood for, the United States and four of the former Soviet Republics signed a memorandum of understanding in 1997 that ultimately was not presented to Congress by President Clinton for ratification.⁴⁴ In December 2001, President George W. Bush, in accordance with the provisions of the ABM Treaty that requires a six month notice before withdrawing from the treaty, gave notice to Russia that the United States was withdrawing from the Anti-Ballistic Missile Treaty. This marked the first time in recent history that the US had withdrawn from a major international treaty.

⁴² The Heritage Foundation, *History of the ABM Treaty*, On-line database, available at: <http://www.heritage.org/Research/MissileDefense/history>

⁴³ Ibid.

⁴⁴ Office of Under Secretary of Defense: Arms Control Implementation and Compliance, *Memorandum of Understanding*, On-line database, available at: http://defenselink.mil/acq/acic/treaties/abm/ad_mou.htm

2. Current Situation

The US withdrawal from the ABM Treaty created an issue for discussion among supporters and critics alike. The supporters of such a move claimed it was necessary in order to test and build a limited national missile defense system to protect the United States from nuclear blackmail from rogue states or non-state actors with newly established nuclear capabilities. John Rhinelander, a negotiator of the original ABM Treaty, claimed that the withdrawal would be a “fatal blow” to the Nuclear Nonproliferation Treaty and could lead to a “world without effective legal constraints on nuclear proliferation.”⁴⁵ However, for months after the Bush decision to withdrawal from the ABM, Russia was able to digest the ramifications and their reactions seemed to be much more tempered than expected. Since President George W. Bush’s announcement of the United States’ intentions to withdrawal from the ABM, the US has intimated the desire to discuss with Russia a bilateral reduction in numbers of nuclear warheads. This, in conjunction with President Bush’s commitment to nonproliferation and arms reduction appears to be another move in shoring up the many systemic problems associated with the treaty-based Nuclear Nonproliferation Regime.

C. COMPREHENSIVE TEST BAN TREATY (CTBT)

1. History

The main purpose of the Comprehensive Test Ban Treaty (CTBT) is to prevent nuclear explosions in all environments for military or civilian use. The treaty was open for signatures in September 1996 and was signed by seventy-one states, including the five declared nuclear weapon states. However, this did not include India and Pakistan, who have subsequently declared themselves nuclear weapon states. To this date they still have not signed.

Article I of the CTBT outlines the basic obligations:

1. Each State Party undertakes not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control.

⁴⁵ US State Department, “ABM Treaty Fact Sheet,” On-line database, available at: <http://www.state.gov/t/ac/rls/fs/2001/6848.htm>

2. Each State Party undertakes, furthermore, to refrain from causing, encouraging, or in any way participating in the carrying out of any nuclear weapon test explosion or any other nuclear explosion.⁴⁶

The history of the CTBT, however, goes back much further than September 1996. Since the beginning of nuclear weapons testing there has been an international desire, albeit quiet at times, to limit and/or prevent nuclear testing. Going back as early as the 1950s, there was a movement by arms control advocates to ban all nuclear explosions due to the nuclear fall-out and the escalating arms race. There were approximately fifty explosions between 16 July 1945, when the United States exploded the first nuclear device in Alamogordo, New Mexico, to 31 December 1953. Through the years there has been limited success in instituting a ban on nuclear explosions. The Partial Test Ban Treaty (PTBT) was introduced in 1963 and banned nuclear tests in the atmosphere, space, and underwater. The PTBT was not, however, signed by two nuclear weapons states, France and China. Another step to eliminating nuclear explosions was the Nuclear Nonproliferation Treaty of 1968. This treaty imposed on non-nuclear states the prohibition of possessing, manufacturing, or acquiring nuclear weapons or other nuclear devices. Subsequent to the fall of the “Iron Curtain” and the dismantling of the Soviet Empire, the talks for the CTBT began again in 1993, spearheaded by the UN. On 10 September 1996, the UN General Assembly adopted the CTBT and its two annexes; however, on 13 October 1999 the United States Senate refused ratification of the Comprehensive Test Ban Treaty.

2. Current Situation

“The failure of the United States Senate to ratify the Comprehensive Test Ban Treaty last October has fundamentally changed international disarmament and nonproliferation efforts.”⁴⁷ This was a sentiment echoed by a majority of those who had hoped for the ratification of the CTBT. Former Chairman of the Joints Chiefs of Staff, Gen. John Shalikashvili, serving as a Special Advisor of President Clinton to the United

⁴⁶ Comprehensive Test Ban Treaty, On-line database, available at: <http://www.ctbto.org/treaty/treatytext.tt.html>

⁴⁷ Hisham Zerriffi and Michele Boyd, “The Comprehensive Test Ban Treaty: Where do we go from here?” on-line database, available at: http://www.ieer.org/sdfiles/vol_8/8-2/ctbtedit.html

States Senate concerning the CTBT, stated that the CTBT was a piece of legislation he fully supported.⁴⁸ The CTBT was viewed by many supporters as a necessary step for the nuclear weapons states to meet the disarmament requirements under the Nuclear Nonproliferation Treaty's Article VI. Furthermore, many supporters of the CTBT claim that under the legal constraints of the NPT, nations such as the United States and France do have obligations to limit testing and development of nuclear weapons.

The Current Bush Administration, after inheriting the Clinton Administrations inability to successfully implement the CTBT via the US Senate, established a "two pronged approach to strengthen multilateral arms control for stemming nonproliferation" and subsequently limiting nuclear testing.⁴⁹ The outcome of not instituting the CTBT internationally and ineffectualizing it by not being a signatory to it in 1999 has not negatively affected the current President Bush's attempts at limiting nuclear proliferation and consequently curtailing any sort of testing as a result. The Bush administration has instituted recently President Bush's Global Nonproliferation policy by emphasizing seven proposals and a litany of other steps to bolster any shortcomings in already established treaties and agreements.

D. NUCLEAR NONPROLIFERATION TREATY (NPT)

1. History

On 1 July 1968 the Nuclear Nonproliferation Treaty (NPT) was open for signatures. Per the treaty there are only five recognized nuclear weapon states: the US, Britain, France, China, and the Soviet Union, now Russia. These five nuclear states agree not to transfer nuclear weapons technology and material to other states, and non-nuclear weapons states agree not to seek to develop nuclear weapons. In May 1995, more than 170 nations agreed to extend the NPT indefinitely and without any restrictions. Currently

⁴⁸ Gen John M. Shalikashvili, "Letter to the President and Report on the Findings and Recommendations Concerning the Comprehensive Nuclear Test Ban Treaty," On-line database, available at: http://www.fas.org/nuke/control/ctbt/text/ctbt_report.html

⁴⁹ Baker Spring, "President Bush Strikes the Proper Balance on Non-Proliferation Policy," The Heritage Foundation, On-line database, available at: <http://www.heritage.org/Research/MissileDefense/bg1728.cfm>

the nations of issue regarding their actions in violation of the NPT are North Korea and Iran with India and Pakistan necessitating scrutiny for their declaration of nuclear capabilities in the late 1990s.

North Korea ratified the NPT but revoked its signature as a result of nuclear inspectors' inspections of North Korea's non-declared nuclear facilities. Iran was also a signatory to the NPT, but has come under suspicion as of late due to their desire to bolster an already active plan to develop nuclear weapons. Currently the International Atomic Energy Agency (IAEA) is conducting a probe into this issue. August 2004, United States intelligence officials and non-governmental experts concluded that diplomatic efforts to prevent the proliferation of nuclear weapons to Iran and North Korea have failed to slow their weapons development programs. India, Pakistan, and Israel all refused to sign the NPT and are currently nuclear capable and had they signed the NPT they would be in violation of it. South Africa had previously embarked on nuclear weapons program but has since signed the NPT and renounced their nuclear capabilities and destroyed their nuclear arsenal. Israel seems to be an enigma in the realm of nuclear weapons development. There appears to be a very public secret concerning their nuclear weapons development that was exposed when Mordecai Vanunu, an Israeli scientist, revealed their program to an English newspaper. Although the Israeli government refuses to neither confirm nor deny their nuclear weapons program, there have been suspicions that they have been actively operating their program for decades.

Nuclear Nonproliferation Treaty Article VI is a major facet of the NPT and the one article that receives the majority of attention. Article VI states, *"Each of the parties to the treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control."*⁵⁰ After over thirty years in existence, Article VI appears to be only a promise. Other important articles of the NPT to note are Article I and Article X. Article I states that nuclear weapons states will not "induce any non-nuclear weapons

⁵⁰ *Nuclear Nonproliferation Treaty*, Text of the Treaty, on-line database, available at: <http://disarmament2.un.org/wmd/npt/npttext.html>

states [from]...acquiring nuclear weapons.”⁵¹ Article X affirms that any state can withdraw from the NPT if they feel that “extraordinary events,” such as a perceived threat, forces them to do so.⁵²

2. Current Situation

The current Bush Administration acknowledges that there are some “remedial problems and systemic shortcomings” in the treaty based nonproliferation regimes.⁵³ This administration has since turned its attention to improving the existing multilateral treaties to better control proliferation. However, critics of the Bush Administration characterize his reliance on nuclear weapons as an “addiction” and this addiction is “constructing the strongest imaginable rationale for other countries to acquire nuclear weapons.”⁵⁴ The NPT is an important facet of the multilateral treaty-based Nuclear Nonproliferation Regime and has been viewed by the Bush Administration as a tool to reduce nuclear weapons via Article VI, but also as a platform for the world to view the actions of the five nuclear weapons states. Stephen G. Rademaker, Assistant Secretary of State for Arms Control, in a speech to the Third Session of the Preparatory Committee for the 2005 Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons in New York City stated, “the Bush Administration has contributed in major ways to this record, and, indeed, has accelerated policies designed to reduce U.S. reliance on nuclear weapons. One of the first major policy initiatives by President Bush was to transform the nature of our relationship with Russia and decide to reduce unilaterally U.S. strategic nuclear warheads to the lowest level in decades. This U.S. commitment led to a similar undertaking by President Putin, and both pledges were later codified in the Moscow Treaty, which entered into force on June 1 of last year. The Treaty requires both countries to reduce to 1700-2200 strategic nuclear warheads by December 31, 2012. The Bilateral

⁵¹ *Nuclear Nonproliferation Treaty*, Text of the Treaty, on-line database, available at: <http://disarmament2.un.org/wmd/npt/npttext.html>.

⁵² Ibid.

⁵³ Baker Spring, “President Bush Strikes the Proper Balance on Non-Proliferation Policy,” The Heritage Foundation, On-line database, available at: <http://www.heritage.org/Research/MissileDefense/bg1728.cfm>

⁵⁴ Kurt Gottfried, “President Bush’s Nuclear Weapons Policy: Illogical, Ineffective, and Dangerous,” Union of Concerned Scientists, On-line database, available at: http://www.ucsusa.org/global_security/nuclear_weapons/page.cfm?pageID=1106

Implementation Commission established under the Treaty had its first meeting in Geneva last month.”⁵⁵ There are several examples of the United States’ commitment to the NPT and in particular Article VI. The Moscow Treaty for bilateral reduction in nuclear weapons; dismantlement of nuclear weapons; measures put in place to implement strict control of fissile material; and cooperative threat reduction (CTC) to assist former Soviet republics in disarming their nuclear weapons and capabilities are all examples of steps that are being actively taken by the current Bush Administration to curtail the systemic problems associated with the treaties and agreements of the Nuclear Nonproliferation Regime.

E. PROLIFERATION SECURITY INITIATIVE (PSI)

1. Current Situation

Foremost among President Bush’s efforts to stop WMD proliferation is the Proliferation Security Initiative [PSI]. The United States and ten other close allies and friends have worked assiduously from May 2003 to develop this initiative, which seeks to combat proliferation by developing new means to disrupt WMD trafficking at sea, in the air, and on land. Our goal is to create a more robust approach to preventing WMD, their delivery systems, and related materials from flowing to and from states and non-state actors of proliferation concern.⁵⁶ PSI has been initiated in a “fast-moving effort” to establish and maintain a harmonized approach to ultimately prevent proliferation. The implementation of PSI is meant to operate not as an organization, but as an activity that many nations will take part in. Through joint exercises and training evolutions, nations will come together to practice and eventually execute missions to prevent the shipment of illicit material while gathering human intelligence to further disrupt state and non-state actors attempts to engage in nuclear (and all WMD) proliferation. PSI will enable multinational efforts to stem proliferation by coordinating with multiple countries to “draw upon an enhanced set of authorities for interdiction” while increasing the

⁵⁵ Stephen G. Rademaker, Speech to the Third Session of the Preparatory Committee for the 2005 Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons, available on-line database: located at, <http://www.state.gov/t/ac/rls/rm/45518.htm>

⁵⁶ John R. Bolton, “The Bush Administration’s Nonproliferation Policy: Successes and Future Change,” John R. Bolton, under Secretary for Arms Control and International Security: Testimony Before House International Relations Committee, Washington D.C., March 30, 2004, On-line database, available at: <http://www.state.gov/t/us/rm/31029.htm>

“cooperation not just among intelligence and military services but in law enforcement as well.”⁵⁷ The current view on PSI is one of global interaction and involvement. In a February [2004] address concerning PSI, President Bush (43) stated, “Our message to proliferators must be consistent and it must be clear: We will find you, and we’re not going to rest until you are stopped.”⁵⁸

F. PRESIDENT BUSH’S GOALS & POLICIES FOR SUCCESS

President Bush has “struck the proper balance” concerning nonproliferation policies. He has articulated a two-pronged approach to “strengthening multilateral arms control for stemming proliferation.” First, President Bush has proposed steps to amend and augment the existing treaty-based regime where systemic short comings have been identified. Second, he has proposed to strengthen the treaty-based regime by initiating internal reform to remedy any issues that are creating problems with countering proliferation. Furthermore, the current Bush Administration has proposed several key measures and initiatives that will further aid in nonproliferation activity. President Bush has initiated a number of Military and Defensive Measures since the events of September 11th, some of which are central to many debates concerning the efficacy of the Bush Administration’s approach to nuclear nonproliferation:

1. Removing the terrorist-supporting Taliban regime in Afghanistan in 2001
2. Adopting a National Security Strategy in 2002 that emphasizes the options for preemptive strikes and preventive wars against terrorists and the regimes that support them
3. Establishing the Northern Command, which is charged with providing for the defense of the American Homeland
4. Removing the Saddam Hussein regime in Iraq in 2003
5. Fielding a missile defense system, which is slated to become operational [2004/05]⁵⁹

⁵⁷ John R. Bolton, “The Bush Administration’s Nonproliferation Policy: Successes and Future Change,” John R. Bolton, under Secretary for Arms Control and International Security: Testimony Before House International Relations Committee, Washington D.C., March 30, 2004, On-line database, available at: <http://www.state.gov/t/us/rm/31029.htm>.

⁵⁸ Ibid.

⁵⁹ Baker Spring, “President Bush Strikes the Proper Balance on Non-Proliferation Policy,” The Heritage Foundation, On-line database, available at: <http://www.heritage.org/Research/MissileDefense/bg1728.cfm>

The Bush Administration has also been quite active in strengthening the Nuclear Nonproliferation Regime's abilities to control proliferation. Chief among these attempts has been the creation and implementation of the Proliferation Security Initiative (PSI), which is a multilateral effort to interdict illicit weapons and material used for creation of WMD, in particular nuclear weapons. In addition, the Bush Administration has been an advocate of intelligence community's efforts in exposing the nuclear black market operations run by Pakistan's lead nuclear scientist, A.Q. Khan. Other attempts to enhance the efficiency and effectiveness of the treaty-based Nuclear Nonproliferation Regime have been centered on shoring up the systemic problems and inherent shortcomings of many of these treaties and agreements. For example:

1. Article V of the NPT establishes an obligation for participating states to facilitate the development of nuclear technology for peaceful purposes, even though some of these activities may increase the risk of proliferation
2. The BWC (Biological Weapons Convention) is both unverifiable and unenforceable
3. The CWC (Chemical Weapons Convention) is also unverifiable and unenforceable⁶⁰

As a result of the recognition that there does exist systemic problems and inherent shortcoming, the Bush Administration has proposed seven steps to improve arms control and restrict proliferation:

1. Broaden the scope of the PSI – to include law enforcement measure to supplement the nonproliferation regime
2. Urge other states to expand their internal control of proliferation activities – in order to utilize the power of national governments to aid in controlling proliferation and strengthening export controls.
3. Expand the Nunn-Lugar program – to continue dismantling nuclear weapons (programs) in former Soviet republics.
4. Curtail the sale of enrichment and reprocessing equipment.
5. Deny the sale of equipment for civilian nuclear programs to countries that fail to observe the IAEA's Additional Protocol on safeguards – which is designed to improve the IAEA's ability to detect an illicit nuclear weapons program.
6. Establish a new special committee under the IAEA Board of Governors for safeguards and verification – to promote enforcement and limit facilitating the international cooperation in peaceful nuclear activities.
7. Deny positions on the IAEA Board of Governors to states that are under investigation for illicit nuclear activities.⁶¹

⁶⁰ Baker Spring, "President Bush Strikes the Proper Balance on Non-Proliferation Policy," The Heritage Foundation, On-line database, available at: <http://www.heritage.org/Research/MissileDefense/bg1728.cfm>.

G. CONCLUSION

The face of proliferation and the reality of the nuclear nonproliferation situation post 9/11 has forced, to a degree, the Bush Administration to embrace and effect change at all levels internally and externally. With the knowledge that terrorists and states that support terrorism are actively trying to develop/build nuclear weapons capabilities, the Bush Administration has had to recognize shortcomings and emphasize change in the face of bureaucratic resistance. I don't believe that post 9/11 has afforded a complete coherency that has allowed all parties to be complicit in changing, however, I do believe that the changes and the forward thinking that has transpired recognizes the need to adjust at certain levels and this has been advantageous and furthermore, correct. I do not harbor any delusions that President Bush and his Administration are infallible, but keeping the realist mindset associated with international relations in context, the changes that have occurred and will continue to occur seem to be appropriate in coordination with the Bush Doctrine and his outlook on international diplomacy. Although, there may exist some powerful resistance, at times, to change could be a result of a myriad of issues, but the reality of today is there is a movement by terrorist to buy, develop, or build nuclear weapons capabilities and this directly affects the security of the United States. President Bush and his administration has ascertained the situation and has looked at the tools for arms control as an effective source to strengthen nuclear nonproliferation in order to ultimately prevent terrorist from obtaining nuclear weapons capabilities. President Bush has taken the appropriate military and defensive actions to strengthen nonproliferation, as well as acknowledging the need to enhance the treaty-based Nuclear Nonproliferation Regimes stance on enforcing the treaties and agreements it derives its power from. President Bush has also pushed for congressional support in enhancing nuclear nonproliferation and Congress must be careful not to undermine the many achievements while still maintaining the appropriate oversight. "Arms control is a means to the ends of national security, not an end in itself. Congress will only compound the risk of catastrophic attack on the American people if it loses sight of this enduring truth."⁶²

⁶¹ Baker Spring, "President Bush Strikes the Proper Balance on Non-Proliferation Policy," The Heritage Foundation, On-line database, available at: <http://www.heritage.org/Research/MissileDefense/bg1728.cfm>.

⁶² Ibid.

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IV. ASSESSMENT OF RUSSIA'S EFFECTIVENESS ON ISSUES OF NUCLEAR NONPROLIFERATION

A. INTRODUCTION

The Cooperative Threat Reduction Program (CTR) was the first large-scale program for U.S.-Russian cooperation on nuclear nonproliferation.. An umbrella agreement on the safe and secure transportation, storage, and destruction of weapons and the prevention of weapons proliferation, the agreement implementing CTR was signed by the presidents of the United States and Russia in June 1992 to provide a framework for accelerated implementation of the START I Treaty and to facilitate large-scale cooperation between the United States and Russia on nuclear nonproliferation. Also known as the Nunn-Lugar program (named for the U.S. senators who sponsored the legislation), the initiative focused on Russia and some other former Soviet republics.⁶³ Although CTR started as an American initiative to institute command, control, accountability, transportation security, and destruction of the former Soviet Union nuclear arsenal, it has become a multi-national effort in nuclear nonproliferation.

Even though there were a total of four Soviet Republics that had nuclear weapons within their geographical confines, Russia was designated the nation that would harbor the former Soviet nuclear weapons stockpile. The four nuclear Soviet Republics were Belarus, Kazakhstan, Russia, and the Ukraine and they signed onto the Nunn-Lugar Cooperative Threat Reduction program with the understanding that they would be responsible for relinquishing their nuclear capabilities to Russia in order to conform to the precepts of the Nuclear Nonproliferation Treaty, particularly Article VI.

The effectiveness of these nations' efforts, particularly Russia, to prevent nuclear proliferation is quite subjective. Although there has been many substantial successes there appears to always be room for improvement. Belarus, Kazakhstan, and the Ukraine have all acted as required under the direction of the CTR, but Russia has, at different

⁶³ U.S National Academies Committee on U.S-Russian Cooperation on Nuclear Non-Proliferation, Russian Academy of Sciences Committee on U.S-Russian Cooperation on Nuclear Non-Proliferation, Development, Security, and Cooperation, National Research Council, *Overcoming Impediments to U.S.-Russian Cooperation on Nuclear Nonproliferation: Report of a Joint Workshop*, (National Academy Press, 2004), pp. 17.

times, been quite difficult to coordinate with regarding the transportation, building security infrastructures, and dismantlement of the many nuclear weapons they inherited.

B. RUSSIAN EFFECTIVENESS IN PREVENTING NUCLEAR PROLIFERATION

On 21 November 1994, 581kg (1,278 pounds) of HEU was transferred from the Ulba Metallurgy Plant 20 miles outside of the northern Kazakhstani city of Ust-Kamenogorsk to the Y-12 plant at the Oak Ridge National Laboratory in Tennessee, in a highly secret project code-named "Sapphire." The project was initiated by President Nursultan Nazarbayev with the full knowledge of Russia, according to Kazakhstani Deputy Prime Minister Vitaliy Mette, in order to prevent the possibility of diversion by terrorists, or by any of the nuclear threshold states near Kazakhstan.⁶⁴ The uranium, reportedly left over from the Soviet Union's secret Alfa submarine program, had been stored at Ulba in unsecured and non-safeguarded facilities, without electronic means of accounting. Instead, quantities were simply recorded by hand into books.⁶⁵ Experts estimated the uranium was sufficient to make 20-25 nuclear bombs, though it was said a "skilled bomb-maker" could have produced as many as 36. One estimate said the material was sufficient for up to 50 bombs.⁶⁶ Kazakhstani experts maintained that only about 5 percent of the HEU was pure enough to be used for weapons, while the rest would have required further processing.⁶⁷ Thirty-one technicians, led by Oak Ridge scientist Alex Riedy, went to Kazakhstan to repackage the uranium into 1,300 steel canisters for shipment by two C-5 transport planes from Kazakhstan to the United States. Empty canisters marked with Tehran addresses were reportedly found in the room next to the one where the uranium was stored. The United States agreed to compensate Kazakhstan for the material, although the transaction was "not handled as a straight business deal." The US compensation to Kazakhstan, though undisclosed, was estimated at between \$10

⁶⁴ William C. Potter, "The 'Sapphire' File: Lessons For International Nonproliferation Cooperation," *Transition*, 17 November 1995, pp. 14-19.

⁶⁵ R. Jeffrey Smith, "Kazakhstan Site Had Lax Security," *Washington Post*, 24 November 1994, p. A52

⁶⁶ "Kazakhstan Says Nuclear Deal Boosts Disarmament," *Reuter*, 24 November 1994.

⁶⁷ Sergey Kozlov, "Uranovaya sdelka okazalas vesma vygodnoy," *Nezavisimaya gazeta*, 26 November 1994.

and \$20 million, in both cash and in-kind assistance.⁶⁸ Project “Sapphire” provides a unique example of the lack of command, control, and security that existed in the nuclear republics of the former Soviet Union shortly after its collapse. Although this particular endeavor between the United States and Kazakhstan may have been unique, it marked a significant event of cooperation between the former Soviet nuclear capable republics and the United States.

Through the Cooperative Threat Reduction (CTR) program, there has been marked cooperation among the nuclear capable republics of the former Soviet Union and the United States. Russia’s role, however, appears to be the biggest and in many respects the most important. The process of the CTR has many different facets that are designed to address the myriad of issues that are of grave concern to the United States, Russia, and the international community. These facets are broken down into three primary categories with a few subsets each. These three categories and their distributions are:

1. Chain of Custody
 - Weapons Protection, Control, & Accounting (WPC&A)
administered by the U.S. Department of Defense (DOD)
 - Material Protection, Control, & Accounting (MPC&A) administered
by the Department of Energy (DOE)
 - Fissile Material Storage
 - Export Control administered by the U.S. Department of State in
coordination with U.S. Department of Commerce on program
implementation
2. Demilitarization
 - Defense Conversion
 - Defense Enterprise Fund (DEF)
 - Initiatives for Proliferation Prevention (IPP)
 - International Science and Technology Centers (ISTC)
3. CTR Destruction and Dismantlement

⁶⁸ Jim Adams, "US-Kazakhstan Uranium Deal May Be One Of A Kind," Reuter, 24 November 1994.

These three broad categories and their subsets account for the bulk of what makes up the Cooperative Threat Reduction program. By analyzing and assessing the Russian and U.S. cooperation in these areas we can get an overview of how effective Russia has been in its attempts to prevent nuclear proliferation, not only from within its own borders, but including the material and expertise from the three other former Soviet nuclear republics.

Another important aspect to the effectiveness of Russia's attempts to prevent nuclear proliferation is how effectual they are in preventing a terrorist organization from penetrating into their nuclear arsenal or purchasing nuclear weapon capabilities. "For Russia, nuclear terrorism is not a Hollywood-style scenario. According to the January 2003 statement of the head of the 12th Main Directorate of the Defense Ministry Gen. Valynkin, who is in charge of nuclear weapon security, 'the information we have obtained indicates that international terrorists have been looking for opportunities to get unauthorized access to [Russian] nuclear facilities and to provoke acts of terrorism and sabotage using nuclear devices'."⁶⁹ Although the obvious threats to Russian National Security exist regarding terrorists unauthorized access to nuclear devices, weapons grade fissile material, and/or the threat to use radioactive matter; the real threat may be the "cooperation (or coordination) between various non-state actors, in particular, between international terrorist organizations and organized crime communities, which is a new phenomenon. With a tremendous increase in their financial power in recent years, non-state actors have become more aggressive in their attempts to get access to (or to develop by themselves) weapons of mass destruction, including a "dirty bomb" scenario."⁷⁰ Terrorist acquisition of nuclear capabilities has become even more of a persistent issue in the post September 11th era, where the ever present perceived terrorist threat fused with the reality of their actions as witnessed by the destruction wrought by hijacked aircraft.

The biggest concern for the United is terrorist acquisition of nuclear capabilities that are linked to the Russian nuclear arsenal. Russia's general lack of command and

⁶⁹ Vladimir A. Orlov, Director of the Center for Policy Studies in Russia (PIR), Moscow, and Editor-in-Chief of Yaderny Kontrol (Nuclear Control), *The Future of the Nuclear Nonproliferation Regime: A View from Russia*, Prepared for the CEPS/IISS European Security Forum, Brussels, 3 March 2003, pp. 6. Online database, available at: <http://www.eusec.org/orlov.htm>

⁷⁰ Ibid, pp. 6.

control of its nuclear arsenal and the huge Russian nuclear complex inherited from the Soviet Union are the biggest contributors to the possible proliferation of their capabilities. This complex is comprised of tens of thousands of nuclear weapons; approximately 200 metric tons of weapons-grade plutonium (Pu); more than 1200 tons of highly enriched uranium (HEU); four serial production plants with huge production capabilities; universities, labs, and other institutions dedicated to training the intellectual aspect of their nuclear program; and a civilian nuclear program that has very little separation from the military complex.⁷¹ The Russian nuclear complex inherited from the Soviet Union fostered the current fear of nuclear proliferation by having lax command and control, security, and accountability. The goal of the Cooperative Threat Reduction program was to coherently reduce the threat of uncontrolled Soviet nukes while systematically revamping the Russian infrastructure to accommodate the changing climate they were experiencing after the collapse of the Soviet Union. However, the 1990s provided for an influx of many different programs that shared the same desired outcome: threat reduction, nuclear accountability, and disarmament.

C. ACCOMPLISHMENTS OF SELECTED THREAT REDUCTION AND NONPROLIFERATION PROGRAMS IN RUSSIA

The following information concerning the accomplishments of selected threat reduction and nuclear nonproliferation programs in Russian was gleaned from the *Russian American Nuclear Security Advisory Council* and a critique written by Michael Roston and David Smigielski. Most of the numbers and statistics are from 2003 and remain the only current and reliable numerical assessment of some of these programs. However, in some instances I have been able to update the numbers according to a more recent assessment of the accomplishment of these selected programs. The updated numbers will be astrixed and appropriately cited from the source they were gathered from.

⁷¹ Michael Roston and David Smigielski, "Accomplishments of Selected Threat Reduction and Nonproliferation Programs in Russia, By Agency," Russian American Nuclear Security Advisory Council, 10 June 2003, Online database, available at:

<http://www.ransac.org/Projects%20and%20Publications/News/Fast%20Facts/index.asp>

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1. Department of Defense (Cooperative Threat Reduction) Programs

a. Strategic Offensive Arms Elimination (Russia and NIS)

| | <u>May 2003</u> | <u>2007 (proj.)</u> | <u>2012 (proj.)</u> |
|---|-----------------|---------------------|---------------------|
| Nuclear warheads deactivated: | 6,032 | 8,371 | 9,726 |
| ICBMs destroyed: | 506 | 982 | 1,264 |
| ICBM silos eliminated: | 438 | 524 | 546 |
| ICBM mobile launchers destroyed: | 1 | 312 | 400 |
| Ballistic missile submarines destroyed: | 26 | 35 | 42 |
| Sub-launched ballistic missiles eliminated: | 382 | 635 | 719 |
| SLBM launchers eliminated: | 408 | 540 | 664 |
| Strategic bombers eliminated: | 109 | 128 | 137 |
| Nuclear Air-to-Surface Missiles destroyed: | 554 | 708 | 708 |
| Nuclear test holes/tunnels sealed: | 194 | 194 | 194 ⁷² |

Table 4. Strategic Offensive Arms Elimination

b. Nuclear Weapons Storage Security

Site Security Enhancements

This program provides Russia with equipment necessary to upgrade physical security at Ministry of Defense (MOD) nuclear weapons storage sites. Accomplishments include:

- Provided 123 kilometers of “Quick fix” security fencing and associated sensor systems for installation at warhead storage sites in Russia.
- The MOD has installed 42 kilometers of fencing at 52 sites, and completed the quick fix installation at more than 30 sites
- Completed access agreements for further installation in April 2003.⁷³

Security Assessment, Training and Logistics

Operating from the Security Assessment and Training Center (SATC) located in Sergiyev Posad, Russia, this program enables Department of Defense (DOD) and MOD development of a system for physical security upgrades of MOD’s nuclear weapons storage sites. SATC continues to test and integrate equipment into MOD’s

⁷² Defense Threat Reduction Agency Scorecard, March 11, 2003, Projections as of November 6, 2002; Additional updates from the Testimony of Deputy Under Secretary of Defense for Technology Security Policy and Counterproliferation, Lisa Bronson, on May 8, 2003

⁷³ Michael Roston and David Smigielski, “Accomplishments of Selected Threat Reduction and Nonproliferation Programs in Russia, By Agency,” Russian American Nuclear Security Advisory Council, 10 June 2003, Online database, available at:

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physical security systems, train and equip MOD's guard force, and enhance the capability of MOD to evaluate personnel with access to nuclear weapons.⁷⁴

c. Nuclear Weapons Transportation Security

This effort supports secure transport of Russian warheads from deployment to storage, and from storage to dismantlement locations. There were 131 shipments to dismantlement facilities and consolidation sites as of September 2002. There are currently, on average, 6-7 shipments per month. DOD has also provided funding for 79 specialized railcars used for warhead transport and has contracted for the development of emergency response vehicles, nuclear weapons recovery equipment and MOD training for response to nuclear accidents. Additional examples of assistance provided include security upgrade kits for railcars, secure blankets, and "supercontainers" for warhead transport and storage. DOD assisted MOD in certifying the proper maintenance of 165 railcars as of the third quarter of 2002, and continues to certify other railcars. DOD secured a commitment from Russia to destroy two unusable offensive weapons program warhead transport rail cars at its own expense for every new car provided by the Cooperative Threat Reduction (CTR) program for dismantlement and secure storage purposes.⁷⁵

d. Construction of Mayak Fissile Material Storage Facility

Over 90% of the work on the first wing of the Mayak Facility has been completed. When finished during 2003, it will hold 25,000 containers of fissile material from more than 6,000 dismantled nuclear weapons. When both wings are completed, the Mayak Facility will store fissile material from approximately 12,500 dismantled nuclear warheads.⁷⁶

⁷⁴ Defense Threat Reduction Agency web site, GAO report, March 2003, Testimony of Deputy Under Secretary of Defense for Technology Security Policy and Counterproliferation Lisa Bronson on May 8, 2003

⁷⁵ Ibid.

⁷⁶ Ibid.

2. Department of Energy Programs

a. Nonproliferation Policy

Reduced Enrichment for Research and Test Reactors (RERTR)

This project works with Russia to facilitate conversion of its research and test reactors from highly enriched uranium (HEU) fuel types to low enriched uranium (LEU) fuels. Accomplishments to date include:

- Successfully tested a generic, high-density LEU fuel type that can be used to replace existing HEU fuels.
- Completed a bilateral agreement with Uzbekistan on cooperation.
- Conversion analysis was initiated for Soviet-designed research reactors in Uzbekistan and Ukraine.

Russian Research Reactor Fuel Return (RRRFR)

This program repatriates civil HEU fuel from Russian-supplied research reactors in various countries to Russia, removing dangerous nuclear materials many regions of proliferation concern. Accomplishments to date include:

- Reached preliminary agreement on spent fuel management cost and pilot shipment site.
- Secretary of State Colin Powell and Energy Secretary Spencer Abraham completed the first agreement with Uzbekistan to repatriate highly enriched uranium to Russia and subsequently convert its research reactor to low-enriched uranium fuel. The agreement also plans security, safety, and storage upgrades at the Uzbek reactor site.
- Drafted and tabled a bilateral agreement on research reactor fuel transfers to Russia.
- Completed six U.S.-Russia-International Atomic Energy Agency fact-finding missions to the Ukraine, Uzbekistan, and Yugoslavia, plus two technical preparation visits to Uzbekistan.

Kazakhstan BN-350 Project

This project prevents proliferation of nuclear weapons by securing the nearly three tons of weapons-grade plutonium in spent fuel discharged from the BN-350 breeder reactor – enough material for hundreds of nuclear weapons. A separate project facilitates decommissioning of the facility. Accomplishments to date include:

- Completed the stabilizing and packaging of spent nuclear fuel in radiation barrier canisters, and placed this material under IAEA safeguards.
- Began joint conceptual design study on dual-use cask proposal to assist decision-making in Kazakhstan.

- Developed innovative safeguards system to measure plutonium in packaged spent fuel assemblies, a unique nuclear fingerprint for each canister, and a nuclear materials monitoring system for IAEA usage during implementation and verification of the program.

Warhead Dismantlement and Fissile Material Transparency

DOE has negotiated lab-to-lab contracts to develop methods and procedures for secure and transparent dismantlement of Russia's nuclear warheads. These contracts attempt to ensure technical dialog between American and Russian nuclear warhead experts, and also to bolster advocates for transparency within the Russian nuclear weapons complex. Accomplishments to date include:

- Completed 35 Lab-to-Lab projects involving joint technology development, experiments, and technical interchange meetings; nearly 40 additional projects are either planned, or ongoing, including 3 technical interchange meetings for FY 2003.
- Specifically negotiated 3 Lab-to-Lab agreements for U.S. access to Russian technologies that can support U.S. counter-terrorism efforts.
- Demonstrated 12 total Russian transparency technologies developed via Lab-to-Lab interactions.
- Arzamas-16 has developed and demonstrated radiation measurement technologies for potential application to the dismantlement process, including the "Passport System" to measure warhead radiation signatures at Russian storage facilities, and the "Radiation Mark System" to uniquely tag and monitor warheads during the dismantlement process.
- Chelyabinsk-70 has conducted transparency technology demonstrations that have detected the presence of high explosives during the dismantlement process, destroyed high explosive removed from dismantled nuclear warheads, destroyed nuclear warhead casings to confirm that the dismantlement process is irreversible, and installed a computer model of a Russian "hypothetical" Russian dismantlement facility for use in analyzing and evaluating the candidate transparency technologies and methods.

Mayak Fissile Material Storage Facility Transparency/Trilateral Initiative

This program is intended to help verify through bilateral and multilateral means the weapons origin of the material to be stored in the Mayak Fissile Material Storage Facility. Accomplishments to date include:

- Devised an "attribute verification with information barriers" technique for monitoring of nuclear weapons storage sites without divulging weapons secrets.

- Developed a Subsidiary Arrangement for implementation of the Trilateral Initiative of the U.S., Russian Federation, and the International Atomic Energy Agency at the Mayak site, which will advance IAEA involvement in verification activities on weapon-origin fissile material.⁷⁷

b. Export Control Program

International Nuclear Export Control Program

This program works with governments in Russia, the NIS, and other states to strengthen national systems of international nuclear export control. It targets emerging suppliers and high-traffic transit nations. Accomplishments to date include:

- Facilitated improvement in Russian and NIS export licensing procedures by establishing partnerships between governments and technical experts, as well as installing an automated licensing systems. Recently installed a secure export license review system in Kazakhstan.
- Encouraged industry compliance with Russian and NIS export control regulations with regional and site-specific industry outreach, provision of compliance software tools, and the production of an export control newsletter. Recently conducted 7 industry compliance workshops in Russia and the Ukraine.
- Developed enforcement capability by enhancing training courses and curricula for Russian and NIS Customs Academies and training customs inspectors to better identify nuclear-related commodities.
- Expanded successful efforts previously used in other states to Baltic, Caucasus, and Central Asian states, including the provision of expert nuclear advice to law enforcement and border agencies and training-the-trainers programs.⁷⁸

c. International Nuclear Materials Protection and Cooperation

Navy Complex

This program improves security in two areas. First, it installs improved nuclear material protection, control, and accounting systems at 36 Russian naval warhead storage sites (5 storage sites, 27 operational sites, and 4 rail transfer points) containing approximately 4,000 nuclear warheads. Second, it improves security over the estimated

⁷⁷ Lab-to-Lab Warhead Dismantlement Transparency Program Webpage, IAEA Bulletin 43/4/2001, Department of Energy FY04, FY03 Budget Justification, DOE News, March 12, 2002, Section 1205 Report to Congress, February 2003

⁷⁸ Michael Roston and David Smigielski, "Accomplishments of Selected Threat Reduction and Nonproliferation Programs in Russia, By Agency," Russian American Nuclear Security Advisory Council, 10 June 2003, pp. 6. Online database, available at:

<http://www.ransac.org/Projects%20and%20Publications/News/Fast%20Facts/index.asp>

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60 metric tons (MTs) of HEU in 34 buildings at 11 naval fuel storage facilities and shipyards where nuclear materials are present. Accomplishments to date include:

- Installed rapid security upgrades on all of the Russian Navy's estimated 4,000 nuclear warheads, and comprehensive upgrades on 40% of the warheads. Rapid upgrades have been installed at 33 of the 36 sites; comprehensive upgrades were completed at 8 locations, and initiated at 5 more as of January 2003.
- Completed comprehensive upgrades on 98% of the Navy's weapons usable material. Comprehensive upgrades were finished at 9 of the 11 fuel storage sites. At these sites, work was completed at 27 buildings, partially completed at 1 building, and recently initiated at 4 buildings.

Strategic Rocket Forces

This program improves security on Russian warheads by installing MPC&A systems at Strategic Rocket Forces (SRF) storage sites. Agreement was reached to initiate this program in FY 2004. Accomplishments to date include:

- Signed vulnerability assessment and conceptual design contracts for 2 SRF pilot project sites.

Minatom Weapons Complex

This program provides upgrades to Ministry of Atomic Energy (Minatom) nuclear weapons, uranium enrichment, and material processing/storage sites, containing 500 MTs of HEU and weapon-grade plutonium at 133 buildings in ten closed "nuclear cities." Accomplishments to date include:

- Installed rapid upgrades on 20% of the weapons-usable nuclear material in the complex, and comprehensive upgrades on 4%.
- Completed upgrades on 14 buildings, partially completed at 12 buildings, and recently initiated work at 20 buildings in the complex.
- Negotiated access to 35 new buildings in the weapons complex.
- Signed 24 new contracts, mostly concerning rapid upgrades and physical protection system design, with Weapons Complex entities, including design contracts to protect 80 MT of weapons-usable material at the Tomsk-7 Chemical Metallurgical Plant.
- Developed central storage facilities at the Chelyabinsk-70 and Arzamas-16 sites, potentially upgrading security on 30 MT of weapons-usable material.

Civilian Nuclear Sites

This program installs MPC&A systems in 76 buildings at 18 Russian sites, in addition to 13 non-Russian sites, containing approximately 40 MTs of the most vulnerable material of proliferation concern. Accomplishments to date include:

- Installed rapid upgrades on 98% of 40 MTs of weapons-usable nuclear material.
- Comprehensive upgrades completed on 54% of materials.
- Comprehensive upgrades have been completed at 11 of 18 Russian sites. At these sites, work was completed at 58 buildings, partially completed at 5 buildings, and recently initiated at 1 building.
- Comprehensive upgrades have been completed at all non-Russian sites.

Material Conversion and Consolidation

This program reduces the complexity and the long-term costs of securing Russian weapons-usable nuclear material by consolidating excess, non-weapons highly enriched uranium and plutonium into fewer, more secure locations. Accomplishments to date include:

- Converted 3.5 of a total of 29 MTs of HEU planned to be converted to LEU; elimination of an additional 1 MT to be completed before the end of 2003.
- Inventoried all nuclear materials at the Obninsk Institute of Physics and Power Engineering, and relocated its Central Storage Facility to a newly remodeled building.
- Will complete removal of fissile material from 23 buildings by the end of FY 2003, reducing the number of locations where material is stored from 162 to 139 buildings.

Radiological Dispersal Devices

This program identifies and pursues actions that can be taken to reduce the threat of a radiological attack against the United States. Specific attention is given to prioritizing better control of materials of greatest concern throughout the world. It cooperates with the IAEA to complete work in Russia and the former Soviet Union. Accomplishments to date include:

- Completed an initial assessment of risks from former Soviet orphaned radioactive sources.
- Initiated security upgrades at 4 sites in Russia, 3 in Uzbekistan, and 1 in Georgia.
- Initiated activities to locate, consolidate, and secure 9 orphan or surplus radioactive sources stored at one site in Georgia.

National Programs and Sustainability

This program includes projects to help ensure sustained operation and maintenance by Russia of installed MPC&A systems, assist Russian development of a legal and regulatory framework on nuclear matters, and support the growth of MPC&A expert cadres in Russia. Accomplishments to date include:

- To promote transportation security, hardened 22% of 638 trucks and 41% of 143 rail cars; the program also provided 13% and hardened 40% of the 488 secure transportation overpacks.
- Installed unattended monitoring systems (MPC&A Operations Monitoring Systems – or MOMS) to allow Russian and U.S. officials to ensure ongoing operation of installed MPC&A systems, with 3% of the work completed.
- Observed 37 inspections/exercises of MPC&A systems at Russian nuclear sites by Gosatomnadzor (GAN, the Russian nuclear safety inspectorate), Minatom or Ministry of the Interior.
- Completed 71 communications connections so that Material Balance Areas at Russian sites can report to the Russian Federal MPC&A Information System (FIS).
- Initiated needs assessment and design activities for an MPC&A support facility in the Kola region.
- Enhanced the equipment of protective forces of nuclear materials by distributing bulletproof vests, helmets, response vehicles, cold-weather uniforms, and other items; rapid upgrades were completed for 5 Russian sites, and 5 Ukrainian sites.

Second Line of Defense

The SLD program provides equipment and training to Russian customs and border security units, to detect, interdict, and prevent nuclear smuggling from Russia and other former Soviet states. Accomplishments to date include:

- Installed 130 radiation detection equipment systems at 15 additional strategic transit and border sites, preventing illicit trafficking in nuclear materials at a total of 20 locations in Russia.
- Provided introductory training to 24 Ukrainian border enforcement officials for nuclear material detection and WMD recognition.⁷⁹
- Surveyed border sites in Kazakhstan.⁸⁰

⁷⁹ Department of Energy FY04, FY03 Budget Justification, Section 1205 Report to Congress, February 2003, Reports Required by Congress in the FY02-FY04 Defense Authorization Act, *Key Reports Relating to Nuclear Weapons, Nonproliferation, Environmental Clean-up, and Nuclear Waste Management*, Alliance for Nuclear Accountability, Online Database, available at: <http://www.ananuclear.org/fy0204reportsrequired.html>

- A mobile training platform has been deployed, complete with training materials, equipment, and video demonstrations.
- Training materials have been developed for use by the 30,000 Russian Customs field personnel.⁸¹
- Different types of equipment have been evaluated at the U.S. national laboratories for use in the program, including a unique Russian-built system for inspecting rail cars.
- Assumed responsibility for installation of radiation detection equipment in 19 states throughout Eastern/Central Europe, the Caucasus, and Central Asia.⁸²

d. International Safeguards

Sustainability of Safeguards and Security Systems in the NIS/Baltics

In order to develop appropriate systems and procedures to sustain the security of protected nuclear material for the foreseeable future in the former Soviet Republics, this program works with national laboratories, private sector entities, and IAEA specialists to develop security infrastructures and create a safeguarding culture consistent with international norms within participating states. Accomplishments to date include:

- Site security upgrades were completed at 13 non-Russian nuclear sites.
- Enhanced previously-installed security upgrades in Uzbekistan.
- Provided physical security and MPC&A training to personnel from Kazakhstan, Ukraine, and Uzbekistan.
- Completed detailed vulnerability assessments of physical security and safeguards systems at 3 sites in Ukraine, one site in Kazakhstan, and one site in Latvia.
- Signed contracts for additional upgrades at two sites in Kazakhstan; initiated negotiations for upgrades at two sites in Ukraine.
- Signed contract for long-term sustainability plans in Kazakhstan.⁸³

⁸⁰ Testimony of Ambassador Linton Brooks before the House Armed Services Committee on March 4, 2003, on-line database, available at:
<http://www.house.gov/hasc/openingstatementsandpressreleases/108thcongress/03-03-04brooks.html>Ibid

⁸¹ Michael Roston and David Smigielski, "Accomplishments of Selected Threat Reduction and Nonproliferation Programs in Russia, By Agency," Russian American Nuclear Security Advisory Council, 10 June 2003, pp. 6. Online database, available at:
<http://www.ransac.org/Projects%20and%20Publications/News/Fast%20Facts/index.asp>

Open link "061003_accomplishments.pdf"

⁸² Ibid.

⁸³ Department of Energy FY04, FY03 Budget Justification, Section 1205 Report to Congress, February 2003, Reports Required by Congress in the FY02-FY04 Defense Authorization Act, Key Reports Relating to Nuclear Weapons, Nonproliferation, Environmental Clean-up, and Nuclear Waste Management, Alliance for Nuclear Accountability, Online Database, available at:
<http://www.ananuclear.org/fy0204reportsrequired.html>

e. Russian Transitions Initiative

Nuclear Cities Initiative (NCI)

This program facilitates reduction of the Russian nuclear weapons complex by removing functions and equipment from the weapons facilities within the closed nuclear cities and helping to create sustainable, alternative non-weapons work for scientists who will be displaced by downsizing. Accomplishments to date include:

- Initialed NCI Access Arrangement with Russia.
- Converted a total of 550,000 square feet of weapons facilities to civilian use.
- Signed closure agreement with Russia, which publicly commits Minatom to cease nuclear weapons work at Avangard by 2003.
- Achieved a 15% reduction in the physical footprint of the Avangard nuclear weapons plant in Sarov, including removal of super-computers from two facilities.
- Leveraged \$24.7 million funding from industry, plus \$50 million for complex downsizing and \$4.8 million to 24 NCI projects from Minatom with \$37.5 million in US government spending.
- Assisted 370 nuclear cities workers in finding employment.
- Opened Open Computing Centers in Sarov and Snezhinsk, which employ former weapons scientists in the areas of software development and modeling complex systems through contract research with U.S. national laboratories and private companies, including Adapco, Oracle, Lucent, and Animatek.
- Opened International Development Centers (IDC) in Zheleznogorsk and Snezhinsk. IDCs are Russian non-profit organizations that support efforts by residents to diversify the economies of the cities. The IDCs helped create 280 jobs.
- Trained 1,800 individuals in business management and marketing skills.
- Created two nonproliferation centers in the closed nuclear cities of Snezhinsk and Sarov. The establishment of the centers is part of a strategy for developing nonproliferation analysis and research as a form of alternative, non-weapons employment for Russian nuclear weapons scientists, while also promoting a nonproliferation culture within Russia.
- Facilitated the award of \$17 million in Minatom defense conversion funds to the Zheleznogorsk City Administration by supporting project evaluation and other required activities.

Initiatives for Proliferation Prevention (IPP)

This program engages former Soviet weapons of mass destruction scientists and experts in cooperative, non-weapons-related projects involving the ten major DOE National Laboratories and U.S. industry. Accomplishments to date include:

- Attracted \$50 million of venture capital funding for commercializing five IPP projects.
- Engaged over 13,000 NIS scientists, engineers, and technicians since program inception; approximately 5,000 are currently employed in applied R&D projects.
- Successfully partnered with 97 different American businesses, leveraging over \$125 million matching contributions by U.S. industry to support government expenditures. US industry currently shares the costs of 132 different projects.
- Five projects attracted \$60 million in private-sector venture capital beyond industry partner commitments.
- Currently 400 projects are underway at 170 institutes in Russia, Ukraine and Kazakhstan. Over 100 of these projects are underway in Russia's closed nuclear cities, particularly Sarov, Snezhinsk, Zheleznogorsk, and Zelenogorsk.⁸⁴
- Successfully commercialized 12 projects, representing over \$30 million in sales and 1,000 long-term jobs created in the former Soviet Union
- Developed technologies with significant counter-terrorism applications, including: needle-free injector systems for mass inoculations; light-weight radiation detectors to detect nuclear materials smuggling; and high-technology, high-volume filters to remove dangerous pathogens from public water supplies.⁸⁵

f. HEU Transparency Implementation

This program develops and implements mutually-agreeable transparency measures for the February 1993 HEU Purchase Agreement between the United States and the Russian Federation, helping to provide overall confidence that the material is weapons origin, and is being downblended and not recycled into new weapons. Accomplishments to date include:

- Verified the conversion of 171.3 MTs of HEU to LEU from 1995 through December 2002.
- Conducted 18 of the 24 allowed Special Monitoring Visits at Russia's four uranium processing facilities in Fiscal Year 2002.
- Completed an agreement between DOE and Minatom, at the Ministerial level, in July 2001 to install Blend Down Monitoring System (BDMS)

⁸⁴ *Department of Energy FY04, FY03 Budget Justification, Section 1205 Report to Congress, February 2003, Reports Required by Congress in the FY02-FY04 Defense Authorization Act, Key Reports Relating to Nuclear Weapons, Nonproliferation, Environmental Clean-up, and Nuclear Waste Management, Alliance for Nuclear Accountability, Online Database, available at: <http://www.ananuclear.org/fy0204reportsrequired.html>*

⁸⁵ *Testimony of Ambassador Linton Brooks before the House Armed Services Committee on March 4, 2003, on-line database, available at: <http://www.house.gov/hasc/openingstatementsandpressreleases/108thcongress/03-03-04brooks.html>*^{ibid.}

equipment at the remaining two Russian blending facilities, with completed installation at both sites planned for 2004.

- The BDMS at Ural Electrochemical Plant (UEIP) was operational 90% of the time.
- Staffed the Transparency Monitoring Office at Novouralsk near UEIP for 30 of the plant's 50-week operational cycle in FY 2002.
- Obtained 80,000 pages of material accountability data from Russia.
- Negotiated access to BDMS equipment at the Zheleznogorsk Electrochemical Plant.⁸⁶

g. International Nuclear Safety and Cooperation

This program is DOE/NNSA's focal point for international nuclear safety and emergency management policies and programs. Working on a broad array of international efforts, the program includes activities involving Soviet-designed research reactor safety and shutdown, BN-350 breeder reactor shutdown, and nuclear power plant protection from sabotage and terrorist attacks. Accomplishments to date include:

- Fabricated, installed, and operated cesium traps for decontamination of coolant at the BN-350 reactor in Kazakhstan, thus completing 20% of required efforts toward the goal of a FY 2002 shutdown.
- Connected 7 Russian nuclear sites to a Situation and Crisis Center.⁸⁷

h. Elimination of Weapons-Grade Plutonium Production

DOE is now the executive agent for this program, which will help Russia refurbish or construct fossil fuel energy plants, enabling Russia to shut down its last three plutonium production reactors that also provide heat and electricity to cities in Siberia. Accomplishments to date include:

- DOE completed its first plutonium storage monitoring visit under the Plutonium Production Reactor Agreement.
- Contracts for initial work at Zheleznogorsk and Seversk were placed.⁸⁸

⁸⁶ Department of Energy FY04, FY03 Budget Justification, Section 1205 Report to Congress, February 2003, Reports Required by Congress in the FY02-FY04 Defense Authorization Act, Key Reports Relating to Nuclear Weapons, Nonproliferation, Environmental Clean-up, and Nuclear Waste Management, Alliance for Nuclear Accountability, Online Database, available at: <http://www.ananuclear.org/fy0204reportsrequired.html>

⁸⁷ Ibid.

⁸⁸ Department of Energy FY04, FY03 Budget Justification, Section 1205 Report to Congress, February 2003, On-line database, available at: http://www.fcnl.org/pdfs/nuc_ransac.pdf#search='Department%20of%20Energy%20FY04,%20FY03%20Budget%20Justification,%20Section%201205%20Report%20to%20Congress,%20February%202003'

i. Accelerated Material Disposition

This new initiative, resulting from the May 2002 Bush-Putin Presidential Summit, re-commits the United States and the Russian Federation to the elimination of additional weapons-usable highly enriched uranium. Accomplishments to date include:

- Completed technical experts report on accelerated nuclear materials reduction involving HEU/LEU purchase and stockpile, HEU research reactor fuel purchase, accelerated RERTR activities, and accelerated Material Conversion and Consolidation implementation.⁸⁹

j. Fissile Materials Disposition

Russian Surplus Fissile Materials Disposition

In September 2000, the U.S. and Russia signed the Plutonium Management and Disposition Agreement, which seeks to transform excess weapons plutonium into forms unusable for weapons. This program will facilitate the final disposition of 68 total tons of excess weapons-grade plutonium (34 tons each from both Russia and the U.S.). Accomplishments to date include:

- Within the framework of the G-8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, pledges above and beyond the originally announced \$200 million amount have reportedly been produced, from the United Kingdom, Japan, Italy and France to support plutonium disposition.
- Completed a number of technical tasks to enable plutonium disposition, including equilibrium core design for VVER-1000 reactors to burn plutonium-uranium mixedoxide (MOX) fuel.
- Initiated discussions on the details of the program for disposing of surplus Russian weapons-grade plutonium.
- Supported development of gas-turbine, modular helium reactor to expand plutonium disposition capacity in Russia.
- Detailed design of MOX Fuel Fabrication facilities will be completed and construction of the facilities in both Russia and the US will begin during FY 2004.⁹⁰

⁸⁹ Department of Energy FY04 Budget Justification, Department of Energy FY04 Budget Justification Reports Required by Congress in the FY02-FY04 Defense Authorization Act, Key Reports Relating to Nuclear Weapons, Nonproliferation, Environmental Clean-up, and Nuclear Waste Management, Alliance for Nuclear Accountability, Online Database, available at: <http://www.ananuclear.org/fy0204reportsrequired.html>

⁹⁰ Ibid.

3. Department of State Programs

a. Export Control and Related Border Security Assistance (EXBS)

The EXBS program broadly seeks to stem the proliferation of weapons of mass destruction by ensuring that potential suppliers have proper controls on exports of arms, dual-use goods, and related technologies. EXBS operates active programs in over 30 countries. It also helps states that may serve as transit and transshipment points to develop the tools to interdict illicit shipments. Within Russia and former Soviet states, the program has worked to improve national legal and regulatory infrastructures related to export controls; provided equipment and training in WMD identification and interdiction techniques for customs officers, border guards, and other personnel; and encouraged regional cooperation in the interdiction of smuggled materials among former Soviet states. The State Department intends to continue funding for projects in the FSU for 2003/2004 while expanding to countries (both source and transit) in South Asia, the Balkans, the Middle East, and Southeast Asia. In addition, sophisticated detection equipment is to be supplied to the Baltic States.⁹¹

b. International Science and Technology Center (ISTC) and Science and Technology Center in Ukraine (STCU)

The Science Centers Program, working through the ISTC and the STCU, is a multilateral program funding projects aimed at preventing WMD proliferation by redirecting former Soviet weapons scientists and experts to peaceful scientific endeavors. Since 1993, the Science Centers Program has engaged almost 50,000 scientists and engineers and continues to support nearly 2,000 scientific research and development projects, producing 270 patentable ideas. As of February 2003, ISTC has funded 1,704 projects valued at \$498 million. Biological and life science projects made up the largest share of the funding (24.5%). The STCU funds nearly 500 projects totaling \$66 million. During 2002, ISTC provided direct grant payments to 25,857 scientists and their team

⁹¹ FY03 International Affairs Budget Request, State Department FY 2004 Budget Request, *Testimony of State Department Bureau of Nonproliferation Assistant Secretary John S. Wolf before the House Committee on International Relations*, May 8, 2003. On-line database, available at: [http://www.istc.ru/istc/website.nsf/~docs/2002+Annual+Report+PDF/\\$file/AR2002_E.pdf](http://www.istc.ru/istc/website.nsf/~docs/2002+Annual+Report+PDF/$file/AR2002_E.pdf)

Testimony Transcript available on-line at: <http://www.globalsecurity.org/wmd/library/news/usa/2003/usa-030320-usia01.htm>

members, producing redirection for 7,690 full-time person-years, added 31 new Partner Organizations, and approved the accession of Tajikistan to the ISTC Agreement.⁹²

c. *Civilian Research and Development Foundation (CRDF)*

The CRDF supports the prevention of "brain drain" of former Soviet scientists and engineers by funding collaborative non-weapons research and development projects. Using a grant from the State Department, the CRDF supports the review process for proposals submitted to institutes under the Science Centers Program. CRDF's nuclear nonproliferation commitment spans across most of its program areas, including the Closed Cities program, the Cooperative Grants program, and the Next Steps to Market program. By the end of 2000, more than 700 defense scientists had participated in 235 projects budgeted at more than \$10 million.⁹³

d. *Nonproliferation and Disarmament Fund (NDF)*

NDF, part of the State Department's Bureau of Nonproliferation, is designed to respond to immediate, unanticipated proliferation challenges in various countries throughout the world. NDF works with DOE to identify and dispose of HEU from Soviet-supplied research reactors throughout the world. In 2003, NDF intends to expand its Dangerous Materials Initiative, a program that inventories, secures, and removes dangerous materials from insecure locations worldwide. In addition, funds will go to expanding NDF's Tracker program, an automated export control system. Further planned activities include a worldwide fissile materials protection initiative and assistance to foreign governments in developing indigenous protection capabilities. As of 2002, NDF has overseen the removal of 100 lbs of HEU from the Vinca reactor in Belgrade, the destruction of 24 SS-23 missiles, 47 SCUD missiles, and 50 FROG

⁹² *ISTC website, ISTC 2002 Annual Report STCU website, Testimony of State Department Bureau of Nonproliferation Assistant Secretary John S. Wolf before the House Committee on International Relations, May 8, 2003.* On-line database, available at:

[http://www.istc.ru/istc/website.nsf/~docs/2002+Annual+Report+PDF/\\$file/AR2002_E.pdf](http://www.istc.ru/istc/website.nsf/~docs/2002+Annual+Report+PDF/$file/AR2002_E.pdf)

Testimony Transcript available on-line at:

<http://www.globalsecurity.org/wmd/library/news/usa/2003/usa-030320-usia01.htm>

⁹³ U.S. Civilian Research and Development Foundation, *CRDF 1998-2000 Program Report*, On-line database, available at:

http://www.crdf.org/ProgramReport/1998_2000_program_report.pdf#search='CRDF%2019982000%20Program%20Report'

missiles, and assisted Cyprus in returning nuclear reactor parts en route to the Middle East to a more secure location.⁹⁴

D. CONCLUSION: STEPS TO IMPROVE THE COOPERATIVE RELATIONSHIP

Russia's coordination with the United States on issues of nuclear nonproliferation has, at times, been strained. On the other hand, there has been significant cooperation between the two nations on some facets of nuclear nonproliferation. Information gleaned from an interview with Dr. Siegfried Hecker, the former Director of the Los Alamos National Laboratory, Los Alamos, New Mexico, confirmed that both cases exist. Although there is a fair amount of cooperation between the U.S. and Russia on paper, there is much room for improvement. Dr. Hecker intimated that the United States, post-Soviet collapse, was more threatened by Russian weaknesses than Russian strengths and therefore should have a significant amount of vested interest in maintaining a high level of cooperation with Russia in order to further account for, secure, protect, and eventually destroy the excessive Russian nuclear materials.

Dr. Hecker claimed that one of the principle issues that has changed the nature of the U.S.-Russian cooperation has been "based on the inadequate security and the changing security environment, principally in Russia, but in Kazakhstan, Belarus, and the Ukraine as well."⁹⁵ Furthermore, after several trips to Russian nuclear labs, Dr. Hecker felt that another big impediment to further cooperation from Russia is centered on the fact that Russians do not feel that their nuclear weapons, fissile material, weapons capabilities, and technical experts are vulnerable or compromisable. "The Soviet Union had an admirable record of safeguarding its weapons-usable materials from theft or diversion. It relied on strict personnel and physical security along with all of the other

⁹⁴ State Department FY2004 Budget Request, Testimony of John Wolf, Assistant Secretary of State for Nonproliferation, before the Senate Foreign Relations Committee, March 19, 2003

⁹⁵ Dr. Siegfried Hecker (the former Director of the Los Alamos National Laboratory, Los Alamos, New Mexico), in interview with the LT Daniel Speer (the author). This interview was conducted at Stanford University at 1520 hrs on 8 April 2005, there is no transcript available. The topic discussed was the centered on the efficacy of the U.S.-Russian cooperation on issues of nuclear nonproliferation from the Russian perspective. Dr. Hecker has significant jurisdiction regarding the Russian perspective as he has been a principle member in laboratory to laboratory partnerships between the United States and Russia. Additionally, his work concerning the Department of Energy's Material Protection, Control, & Accountability program has been intimate with several visits to Russian nuclear labs over the past decade.

protections of a centrally controlled police state. Even during my [Dr. Hecker] first visit to the Russian nuclear facilities in 1992, it was obvious that they were ill-equipped to deal with the changes resulting from the breakup of the Soviet Union and loss of central control.”⁹⁶ The Russian scientists didn’t recognize the threats of proliferation from within posed to the safety and security of their nuclear complex. This notion was directly addressed via the Material Protection, Control, & Accountability (MPC&A) program which was and continues to be a major part of the U.S. Department of Energy’s (DOE) function within the Cooperative Threat Reduction program. A major function of the DOE’s work centered on the “lab-to-lab” cooperation between Russia and the United States. This “partnership mechanism was essential to deal with the enormous sensitivity Russians associated with all the nuclear facilities, and this made it possible to break the stalemate that had slowed government-to-government efforts in this area.”⁹⁷ Initially, MPC&A lab-to-lab coordination yielded significant improvements in cooperation, however, over time and as the “program grew, the United States lost sight of the fact that these are Russian nuclear materials in the Russian nuclear complex. As the U.S. approach changed from a cooperative approach to a more confrontational, bureaucratic approach, the Russian side began to resist what it considered excessive U.S. intrusiveness into its defense facilities.”⁹⁸ Combining this change in U.S. approach, with, as Dr. Hecker surmised, the differing points of view on what was “secure enough” and Russian

⁹⁶ Dr. Siegfried S. Hecker, “Thoughts about an Integrated Strategy for Nuclear Cooperation with Russia,” *The Nonproliferation Review*, Summer 2001, Center for Nonproliferation Studies, Monterey Institute of International Studies, pp. 7, On-line database, available at: <http://cns.miis.edu/pubs/npr/vol08/82/heck82.pdf>

⁹⁷ Ibid, pp. 8.

The initial plans of the DOE MPC&A program are captured in *Unified U.S.-Russian Plan for Cooperation on Nuclear Materials Protection, Control, and Accounting (MPC&A) between Department of Energy Laboratories and the Institutes and Enterprises of the Ministry of Atomic Energy (Minatom) Nuclear Defense Complex, Report of the Joint U.S.-Russian MPC&A Steering Group*, September 1, 1995.

⁹⁸ Ibid, pp. 8.

president, Vladimir Putin's pragmatic approach to his country's nuclear defense facilities, the subsequent cooperation between the United States and Russia slowed dramatically.⁹⁹

Another aspect of the U.S.-Russian cooperation is the remaining work that must be done to further secure and safeguard the remaining Russian, Kazakhstani, Belarusian, and Ukrainian fissile material. "The remaining work will be very difficult because greater cooperation and trust are required to extend the program to the more sensitive facilities with large amounts of fissile material. Also, U.S. demands for strict accountability regarding the expenditures of U.S. funds naturally conflict with strict Russian secrecy requirements."¹⁰⁰ Yet another aspect of nuclear material protection is centered on the protection of these fissile materials against possible terrorist acquisition for not only detonation but dispersal as well. This notion is only more prevalent in the post September 11th era where the concern for terrorist with nuclear capabilities is unalterably feared. The fear of nuclear terrorism and proliferation provides a segue to further the cooperative efforts that already exist. The future of U.S.-Russian cooperation will necessitate Russia and the other former Soviet nuclear republics realizing the vulnerabilities of their nuclear complex and a subsequent "comprehensive reassessment of what facilities represent the most urgent threat...The joint reassessment should address what remains to be done to increase the security of the most vulnerable nuclear materials by greater protection or consolidation."¹⁰¹ Dr. Hecker highlights seven areas for potential cooperation:

1. Improve nuclear materials protection and remove weapons-usable nuclear materials in Kazakhstan. The Republic of Kazakhstan inherited from the

⁹⁹ Dr. Siegfried Hecker (the former Director of the Los Alamos National Laboratory, Los Alamos, New Mexico), in interview with the LT Daniel Speer (the author). This interview was conducted at Stanford University at 1520 hrs on 8 April 2005, there is no transcript available. The topic discussed was the centered on the efficacy of the U.S.-Russian cooperation on issues of nuclear nonproliferation from the Russian perspective. Dr. Hecker has significant jurisdiction regarding the Russian perspective as he has been a principle member in laboratory to laboratory partnerships between the United States and Russia. Additionally, his work concerning the Department of Energy's Material Protection, Control, & Accountability program has been intimate with several visits to Russian nuclear labs over the past decade.

¹⁰⁰ Dr. Siegfried S. Hecker, "Thoughts about an Integrated Strategy for Nuclear Cooperation with Russia," *The Nonproliferation Review*, Summer 2001, Center for Nonproliferation Studies, Monterey Institute of International Studies, pp. 8, On-line database, available at: <http://cns.miis.edu/pubs/npr/vol08/82/heck82.pdf>

¹⁰¹ Ibid, pp. 8.

Soviet Union one commercial breeder reactor and four research reactors, all of which use fuel posing a significant proliferation risk.¹⁰²

2. Refocus Material Protection, Control, & Accounting (MPC&A) at military sites, including the weapons assembly and disassembly facilities. With two of four Russian serial production plants scheduled to close by 2006, the United States and Russia need to focus on the nuclear materials that still need modern safeguard systems.¹⁰³
3. Accelerate MPC&A with the Russian Navy. Significant progress has been made since the early 1990s to secure the nuclear material associated with the Russian Navy. However, progress needs to be made in executing the measures needed to sustain consistent securing of spent naval nuclear fuels.¹⁰⁴
4. Reengineer MPC&A at Russian civilian nuclear sites. “It is time for both sides to take stock of accomplishments and remaining challenges and redesign the program accordingly.”¹⁰⁵ This would require the Russians to take responsibility for regulatory reform and enhance safeguards within the Russian government. Coordination with the International Atomic Energy Agency (IAEA) on issue of safeguards would be advisable.
5. Downsize civilian and military nuclear complexes. “The number of facilities that require nuclear safeguards in Russia and the Newly Independent States (NIS) may be nearly one hundred. This factor needs to be consolidated into fewer but better protected facilities. This most likely would require significant cooperation with the United States for funding and technical help.”¹⁰⁶

¹⁰² Dr. Siegfried S. Hecker, “Thoughts about an Integrated Strategy for Nuclear Cooperation with Russia,” *The Nonproliferation Review*, Summer 2001, Center for Nonproliferation Studies, Monterey Institute of International Studies, pp. 9, On-line database, available at: <http://cns.miis.edu/pubs/npr/vol08/82/heck82.pdf>

¹⁰³ Ibid, pp. 9.

¹⁰⁴ Ibid, pp. 9.

¹⁰⁵ Ibid, pp. 9.

¹⁰⁶ Ibid, pp. 9.

6. Explore and remediate non-conventional proliferation threats. Evaluation of, not only high-grade nuclear material, but low-grade material as well. Low-grade material could be from production residue, nuclear waste, nuclear testing residue, or nuclear systems accidentally or intentionally dumped at sea. “In addition, such low-grade weapons useable materials and other nuclear isotopes pose a significant threat for radioactive dispersal devices by terrorists, sub-national groups, or rogue countries.”¹⁰⁷
7. Enhance “second-line” defense border control programs. This program aims to enhance border controls in order to augment protection at the source by focusing on prevention of nuclear shipments across the Russian border. Although the Russian border is massive, enhancing “second-line” defense will aid in deterring nuclear smuggling.¹⁰⁸

These seven areas combined with aggressive prevention of nuclear exports from the former Soviet republics’ stockpiles and the immense Russian stockpile will further aid in the prevention of nuclear proliferation. Export of nuclear material by Russia has been a concern since the collapse of the Soviet Union and, more so, since their relatively recent agreements with India and Iran. However, “regardless of how the overall relationship between the United States and Russia develops, it is in the interest of the United States to have Russia be a responsible exporter of nuclear technologies.”¹⁰⁹ This will require an agreement on the “virtues and prospects of nuclear power,” and to close the gap between the respective differing views of how nuclear technology can be employed to provide power and other benefits and not just weapons.¹¹⁰ The United States will have to lead the way on cooperative efforts in order to facilitate instances of joint proliferation risk assessment for nuclear power and fuel cycles, joint export control, joint research on reactor safety, and joint research on proliferation-resistant fuel cycles. These

¹⁰⁷ Dr. Siegfried S. Hecker, “Thoughts about an Integrated Strategy for Nuclear Cooperation with Russia,” *The Nonproliferation Review*, Summer 2001, Center for Nonproliferation Studies, Monterey Institute of International Studies, pp. 10, On-line database, available at: <http://cns.miis.edu/pubs/npr/vol08/82/heck82.pdf>

¹⁰⁸ Ibid. pp. 10.

¹⁰⁹ Ibid. pp. 11.

¹¹⁰ Ibid. pp. 11.

cases for possible collaborative efforts are essential to stemming the Russian tide of nuclear exports.

Prevention of the export of scientific and nuclear “know-how” is another necessary step needed to be taken in order to further prevent the proliferation of nuclear weapons and weapons knowledge. With the purpose of preventing “brain drain” the United States and Russian must also address the enormous Russian nuclear complex to include their weapons producing capacity and their weapons stockpiles. The Russian nuclear complex was inherited from the Soviet Union and it was massive. This complex is a state within a state; it encompasses cities with infrastructures to accommodate over a million people at the various different sites. This nuclear complex has built over 100,000 weapons and has created huge amounts of nuclear material: 125 to 200 metric tons of plutonium, >1200 metric tons of highly enriched uranium, and 30 metric tons of reprocessed civilian plutonium. Furthermore, the former Soviet complex has an enormous production capacity. The Russians inherited three major nuclear materials production sites and four serial production plants. The intellectual capacity is quite large as well, to include 3 major labs, dedicated universities, and dozens of other institutes.¹¹¹ The points for cooperation to prevent “brain-drain” start with effectively reducing the Russian nuclear complex and to, subsequently, offer alternative employment for those with technical expertise to prevent them from selling their services to rogue states or terrorist organizations. This is not an easy proposition; however, gainful employment for those with technical expertise is essential and may require funding from the West in addition to intense Russian involvement to discourage their scientists from selling their knowledge.

Another point for collaboration between Russia and the United States is concerned with the prevention of nuclear accidents and environmental disasters. “In the nuclear business, anyone’s accident is everyone’s accident, whether reactors or weapons are involved.”¹¹² The concern with the stewardship of nuclear material is two fold. On the one hand, there is wide concern for the safe keeping and implementation of nuclear

¹¹¹ Nuclear Threat Initiative, *Russia; Nuclear Warhead Production Complex*, NTI database on-line, available at: <http://www.nti.org/db/nisprofs/russia/weafacl/overview.htm>

¹¹² Dr. Siegfried S. Hecker, “Thoughts about an Integrated Strategy for Nuclear Cooperation with Russia,” *The Nonproliferation Review*, Summer 2001, Center for Nonproliferation Studies, Monterey Institute of International Studies, pp. 8, On-line database, available at: <http://cns.miis.edu/pubs/npr/vol08/82/heck82.pdf>

weapons and reactors from an international perspective in order to prevent a global catastrophe. On the other hand, the fear of undermining the public's trust and avoiding environmental disasters while in controlling nuclear material must be considered essential to U.S.-Russian cooperative efforts. Although environmental disasters are "typically localized," there are instances of former Soviet practices "such as nuclear dumping in the arctic seas and nuclear test practices at the Semipalatinsk test site in Kazakhstan" that clearly extend into the international arena and must be addressed.¹¹³ It is clearly in the interest of the United States that another "Chernobyl accident or some other nuclear weapons of facility accident in Russia or the NIS be avoided."¹¹⁴ To facilitate the avoidance of such events from occurring, there are at least four instances for possible cooperation between the United States and Russia.

1. Collaboration for nuclear accident prevention. This would require a joint technical working group to examine collaborative steps that could be implemented to aid in the avoidance of nuclear accidents.¹¹⁵
2. Nuclear complex cleanup. The United States could share its experiences in the arena of successes and lessons learned in order to further aid in preventing international implications of nuclear negligence. This would obviously foster further cooperation and could lead to international involvement.¹¹⁶
3. Environmental research and development collaboration. The sharing of environmental information, databases, and joint research could offer Russia and the United States, not only valuable information on environmental impacts, but positive cooperation on a necessary issue that could lead to further cooperation on more sensitive issues.

¹¹³ Dr. Siegfried S. Hecker, "Thoughts about an Integrated Strategy for Nuclear Cooperation with Russia," *The Nonproliferation Review*, Summer 2001, Center for Nonproliferation Studies, Monterey Institute of International Studies, pp. 18, On-line database, available at: <http://cns.miis.edu/pubs/npr/vol08/82/heck82.pdf>

¹¹⁴ Ibid. pp. 19.

¹¹⁵ Ibid. pp.19.

¹¹⁶ Ibid. pp.19.

4. Collaboration on health effects. This effort would help to derive research on health effects of radioactive contamination. Both parties would benefit from this collaborative effort.¹¹⁷

Essentially, the risk the Russian nuclear complex poses to the United States national security requires that positive steps must be taken to ensure an increase in constructive cooperation. As depicted throughout this chapter, there have been many dramatic improvements via the various treaties and agreements, however, many urgent issues still exist over a decade after the collapse of the Soviet Union. A more collaborative relationship needs to be fostered in order to facilitate further accounting, securing, control, and destruction of the former Soviet nuclear arsenal. This cooperative effort needs to be viewed in the stratum of affecting the future Russian nuclear programs. The resulting effect of an increased cooperative relationship will be enhanced U.S. and global security.

¹¹⁷ Dr. Siegfried S. Hecker, "Thoughts about an Integrated Strategy for Nuclear Cooperation with Russia," *The Nonproliferation Review*, Summer 2001, Center for Nonproliferation Studies, Monterey Institute of International Studies, pp. 19, On-line database, available at: <http://cns.miis.edu/pubs/npr/vol08/82/heck82.pdf>

V. CONCLUSION

Information highlighting current cooperative efforts between the United States and Russian has been presented throughout this thesis. As well, information indicating that their cooperative relationship has a long road to unfettered success has been provided. It is the latter that will be essential to further expanding cooperation and collaboration between these two countries. Currently there are several international agreements, treaties, and programs that drive the efforts to prevent nuclear proliferation. The primary initiative, the Cooperative Threat Reduction program, works in concert with other threat reduction and arms elimination programs (SORT, START I/II, NPT, CTBT, & PSI) in order to successfully reduce the threat of nuclear proliferation from the former Soviet nuclear stockpile. However, the goal of globalizing these efforts in order to prevent global nuclear proliferation has recently become a principal issue in the international arena. This is a result, primarily, of the fear generated from the events of September 11, 2001, and the growing concern of rogue state and terrorist organizations acquisition of nuclear weapons or fissile material. The future of threat reduction and arms elimination will undoubtedly be centered on international agreements and treaties with the United States playing a chief role, and Russia, to a lesser degree offering assistance and providing a model from which programs can be measured to determine their efficacy. This is due in part to the work and success, thus far, of U.S.-Russian cooperation. Additionally, the United States has keen interest, financial resources, military infrastructure, and the requisite nuclear technology and capabilities to be a primary member of this international movement.

Through the efforts of the Nuclear Nonproliferation Regime, the Nuclear Nonproliferation Treaty, the Cooperative Threat Reduction program, and the various other arms elimination and proliferation prevention agreements the future cooperation between Russia and the United States must continue to drive forward. The success of these programs and agreements, however, will be the ultimate litmus test of how effective the cooperation between the United States and Russia will continue to be. Currently, there is a need for a “global approach to secure all nuclear weapons, as well as HEU [highly enriched uranium], plutonium, and other fissile material, to safeguard against

illicit nuclear weapons programs, trafficking, and terrorism.”¹¹⁸ Furthermore, to successfully implement a global approach to nuclear nonproliferation, focus must first be on the U.S.-Russian relationship and continued cooperation to “overcoming obstacles such as liability and other legal and political issues that have seriously hindered progress in the U.S.-Russian CTR partnership in recent years.”¹¹⁹ The general consensus dictates that to emphasize the importance of a continued good will relationship, there should be a summit between the Russian and American Presidents. The goal of such a summit should be a comprehensive review of the current CTR programs and their success and “to decide what steps need to be taken to accelerate and sustain this joint effort.”¹²⁰ Also, a review of incentives for maintaining threat reduction initiatives will further aid in establishing and maintaining continuity between localized nonproliferation efforts in Russia and the globalizing efforts currently being initiated by the United States. In a key nonproliferation speech on 11 February 2004, President Bush introduced a seven step approach to globalize the prevention of nuclear proliferation to include globalizing the Cooperative Threat Reduction program. These seven steps, again, are:

1. Broaden the scope of the Proliferation Security Initiative.
2. Urge other states to expand their internal control of proliferation activities.
3. Expand the Cooperative Threat Reduction program.
4. Curtail the sale of enrichment and reprocessing equipment.
5. Deny the sale of civilian nuclear equipment for those nations that fail to observe the International Atomic Energy Agency’s (IAEA) *Additional Protocol on Safeguards*.
6. Establish a new special committee under the IAEA Board of Governors for safeguards and verification.
7. Establish a new committee under the IAEA’s Board of Governors for Safeguard and Verification. Deny positions on the IAEA’s Board of Governors for Safeguard and Verification to states that are under investigation for illicit nuclear activity.¹²¹

¹¹⁸ James E. Goodby, Daniel L. Burghart, Cheryl A. Loeb, and Charles L. Thornton, *Cooperative Threat Reduction for a New Era*, Center for Technology and National Security Policy, National Defense University, September 2004, pp. 3.

¹¹⁹ Ibid. pp. 3.

¹²⁰ Ibid. pp. 3.

¹²¹ Baker Spring, “President Bush Strikes the Proper Balance on Non-Proliferation Policy,” The Heritage Foundation, On-line database, available at: <http://www.heritage.org/Research/MissileDefense/bg1728.cfm>

The Cooperative Threat Reduction program may offer the framework for the most efficacious way to globalize the nuclear nonproliferation effort. A prime reason is that CTR has proven to be fluid. “CTR programs have evolved and expanded over time, adjusting to Russian, [NIS] states, and U.S. priorities, as well as to changing perceptions about which threats posed the greatest risk. The programs have also bowed upon occasion to bureaucratic intransigence and practical considerations. In one notable incident, Department of Energy officials provided blankets to facility guards who were leaving their posts to collect wood to build fires. As the economy worsened in Russia in the mid-1990s, CTR projects sought to provide alternative employment and sources of income for unpaid or out-of-work WMD scientists. Increased reports of attempts to steal nuclear material highlighted the need for CTR to address material protection, control and accounting (MPC&A) measures for nuclear material, consolidation of nuclear weapons and material, and secure transportation. The United States developed a practical approach: “quick-fixes,” like bars on windows, blast-proof doors, fences, followed by a second stage that included more sophisticated security measures like sensors, cameras, and personnel access measures.”¹²² The fact that CTR has been able to adjust to the threat and/or priorities as they change over time makes it a unique program to cite as a major example for the globalizing nuclear nonproliferation efforts. Additionally, CTR has already gone through the growing pains of trial and error, and for the most part has incorporated the necessary tools to be proactive vice strictly reactive. The possible uses of CTR outside of the former Soviet Union may be done in the realm of a four part approach.

1. Weapons Security. This may be simply funding for the training of armed guards. “Nonetheless, some observers have advocated assistance to improve nuclear weapons security with the objective of ensuring that weapons could not be stolen or detonated by an unauthorized person.”¹²³

¹²² Sharon Squassoni, “Globalizing Cooperative Threat Reduction: A Survey of Options, CRS Report for Congress, pp. 14, On-line database, available at: <http://fpc.state.gov/documents/organization/32006.pdf#search='Globalizing%20Cooperative%20Threat%20Reduction:'>

¹²³ Ibid. pp. 15.

2. Site Security. The goal of this measure would be to prevent unauthorized access or removal of sensitive nuclear material from nuclear sites. CTR could offer the lessons learned from the U.S. and Russian experiences protecting their respective nuclear arsenal.
3. Material Security. This would be an approach to protecting and securing actual material, not just the site this material is contained within. The U.S. Department of Energy's Material Protection, Control, & Accounting program has almost a decade of experience which could be advantageous in aiding the security of the various other nations' nuclear material.
4. Personnel Security. This is the prevention of "brain drain" by providing financial incentives to scientists to keep them from selling their expertise. The CTR has worked in conjunction with international science centers to "provide secure jobs, interesting work, and an awareness of or commitment to nonproliferation. Programs could also establish a database of relevant scientists in certain states, either to target funding or to track their activities."¹²⁴

Another source of indispensable importance to the prevention of nuclear proliferation is the Nuclear Nonproliferation Treaty (NPT). This treaty is currently undergoing a conference review in New York City. Leading up to this particular conference there have been a myriad of points of view about how this treaty conference may turn out. The concerns leading up to this conference have been the possible reaction of the United States regarding, not only the rising fear of international terrorism with nuclear capabilities, but the international pressure to enforce the NPT's articles IV, V, and VI. These articles state respectively, that nations have the right to engage in exchange of technology, expertise, materials, and scientific information for the peaceful use of nuclear energy; that non-weapon states party to the treaty have access to peaceful applications of nuclear explosions; and that all nations have the obligation to adhere to the cessation of nuclear arms to a degree of total disarmament.¹²⁵ Former President of the

¹²⁴ Sharon Squassoni, "Globalizing Cooperative Threat Reduction: A Survey of Options, CRS Report for Congress, pp. 15, On-line database, available at: <http://fpc.state.gov/documents/organization/32006.pdf#search='Globalizing%20Cooperative%20Threat%20Reduction:'>

¹²⁵ *Nuclear Nonproliferation Treaty*, Text of the Treaty, United Nations, On-line database, available at: <http://disarmament2.un.org/wmd/npt/npttext.html>

United States, Jimmy Carter, wrote in an article for the Washington Post, 28 March 2005, “renewal talks for the nuclear Nonproliferation Treaty are scheduled for May, yet the United States and other nuclear powers seem indifferent to its fate. This is remarkable, considering the addition of Iran and North Korea as states that either possess or seek nuclear weapons programs. A recent United Nations report warned starkly: “We are approaching a point at which the erosion of the non-proliferation regime could become irreversible and result in a cascade of proliferation.””¹²⁶ He further asserted that, “The United States is the major culprit in this erosion of the NPT. While claiming to be protecting the world from proliferation threats in Iraq, Libya, Iran and North Korea, American leaders not only have abandoned existing treaty restraints but also have asserted plans to test and develop new weapons, including anti-ballistic missiles, the earth-penetrating “bunker buster” and perhaps some new “small” bombs. They also have abandoned past pledges and now threaten first use of nuclear weapons against non-nuclear states.”¹²⁷ His claims are not without substance, for example, the Bush Administration announced in December 2001 the withdrawal of the United States from the Anti-ballistic Missile (ABM) Treaty. In addition, several developments in the recent years have lead many nonproliferation experts and NPT party nations to assert that the Nuclear Nonproliferation Regime needs to be bolstered: the discovery of the A.Q. Khan nuclear black market network; Iran’s unreported nuclear activities, including secret uranium enrichment facilities; the withdrawal of North Korea from the NPT in April 2003; and the discovery of Libya’s covert nuclear weapons program, renounced in December 2003. “Brazilian Ambassador Sergio Duarte, who will chair the May Review Conference, suggested that the main difficulty facing the review conference will be how to balance a perceived need for greater controls with treaty provisions that ensure the right to peaceful applications of nuclear technology.”¹²⁸ However, there are some that claim these five year review conferences are no longer essential to the efficacy of the NPT because the NPT was extended indefinitely in 1995. Keeping with this view point,

¹²⁶ Jimmy Carter, “Saving Nonproliferation,” Washington Post, 28 March 2005, pp. 1. On-line database, available at: <http://www.washingtonpost.com/wp-dyn/articles/A5754-2005Mar27.html>

¹²⁷ Ibid. pp. 2.

¹²⁸ Sharon Squassoni, “The Nuclear Nonproliferation Treaty Review Conference: Issues for Congress,” CRS Report for Congress (RL32857), 16 May 2005, pp. 2.

the outcome of this review conference will be irrelevant; the NPT will stand or fall on its own merits. However, the issues and topics that are most likely to permeate this conference will be the requirement dictated by the New Agenda Coalition (Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa, and Sweden) to ensure further action by the five declared nuclear states on disarmament issues; agreement by participants on an agenda for the conference; and the congruence of action by the five declared nuclear states on the myriad of issues to include peaceful use of nuclear technology and prevention of nuclear proliferation by rogue states (Iran and North Korea) and terrorist organizations.¹²⁹ The overall goal of this conference, whether it proves to be efficacious or not, will be to strengthen the Nuclear Nonproliferation Regime.

The Carnegie Endowment for International Peace created a “blueprint” for the strengthening of the international Nuclear Nonproliferation Regime in a study released in March 2005 titled, *Universal Compliance*. This report incorporated inputs from experts and officials from the United States and twenty other nations across Europe, the Middle East, Asia, Russia, and the former Soviet States. In order to effectively bolster the Nuclear Nonproliferation Regime and commit to the Nuclear Nonproliferation Treaty’s articles, the Carnegie Endowment for International Peace created an “effective strategy for nuclear security” which will require “*universal compliance* with the norms and rules of a *toughened* nuclear nonproliferation regime. *Compliance* means more than declarations of good intent—it means actual performance. *Universal* means that nonproliferation norms and rules must be extended not only to treaty members, but also to all states and to non-state actors. Six obligations form the core of the universal compliance strategy. Together, they form a *balance of obligations* among the nuclear and non-nuclear states, and erect a defense-in-depth against the spread of nuclear weapons. Nearly one hundred policy recommendations flow from these obligations, of which twenty form the priority action agenda.”¹³⁰ These six core obligations are:

¹²⁹ Sharon Squassoni, “The Nuclear Nonproliferation Treaty Review Conference: Issues for Congress,” CRS Report for Congress (RL32857), 16 May 2005, pp 3-17.

¹³⁰ George Perkovich, Jessica T. Mathews, Joseph Cirincione, Rose Gottemoeller, and Jon B. Wolfsthal, *Universal Compliance: A Strategy for Nuclear Security*, The Carnegie Endowment for International Peace, March 2005, pp. 7, On-line database, available at: www.CarnegieEndowment.org/strategy

1. Make nonproliferation irreversible. Tighten rules and restriction around the production of fissile material and withdrawal from the NPT.¹³¹
2. Devalue the political and military currency of nuclear weapons. This requires nations to diminish the role of nuclear weapons in security policies and international politics. Additionally, this obligation will require declared nuclear weapon states to ascribe to steady and verifiable disarmament of nuclear arsenals.¹³²
3. Secure all nuclear material. This will require all states to maintain vigorous standards for securing, monitoring, and accounting for fissile material in order to prevent nuclear terrorism and create the potential for secure nuclear disarmament.¹³³
4. Stop illegal transfers. This requires nations to stem the possibility of scientific know-how, technologies, and material from being sold or bargained for by other states, non-state actors, or corporations.¹³⁴
5. Commit to conflict resolution. Concentrate the diplomatic efforts of major powers in order to help solve regional conflicts which may provide incentive for regional hegemony search for security under the nuclear capabilities umbrella.¹³⁵
6. Solve the three-state problem. This involves addressing acceptance of the NPT by Pakistan, Israel, and India.¹³⁶

To elucidate the sheer numbers associated with the nuclear issue and to further highlight the potential for nuclear proliferation, not only from the five declared nuclear states, but from the nations in the few unstable regions of the world, the following table

¹³¹ George Perkovich, Jessica T. Mathews, Joseph Cirincione, Rose Gottemoeller, and Jon B. Wolfsthal, *Universal Compliance: A Strategy for Nuclear Security*, The Carnegie Endowment for International Peace, March 2005, pp. 37, On-line database, available at: www.CarnegieEndowment.org/strategy

¹³² Ibid, pp. 38.

¹³³ Ibid, pp. 39.

¹³⁴ Ibid, pp. 40.

¹³⁵ Ibid, pp. 41.

¹³⁶ Ibid, pp. 42.

succinctly highlights the current and former nations with nuclear weapons and/or nuclear programs.

Figure 2. Countries with Nuclear Weapons or Programs, Past and Present¹³⁷

| | |
|--|---|
| NPT NUCLEAR WEAPON STATES China United Kingdom France United States Russia | RECENTLY TERMINATED PROGRAMS Iraq Libya |
| NON-NPT NUCLEAR WEAPON STATES India Israel Pakistan | GAVE UP INHERITED WEAPONS Belarus Kazakhstan Ukraine |
| SUSPECTED PROGRAMS Iran North Korea | PROGRAMS OR CONSIDERATION ENDED AFTER 1970 Argentina ^a South Korea Australia ^b Spain ^a Brazil Switzerland ^b Canada ^c Taiwan Romania Yugoslavia South Africa |
| INTENTIONS SUSPECTED BUT NO WEAPONS PROGRAM IDENTIFIED Algeria Saudi Arabia Syria | PROGRAMS OR CONSIDERATION ENDED BEFORE 1970 Egypt Norway ^b Italy ^b Sweden Japan ^b West Germany ^d |

Note: Thirty-five countries in total.

- a Country had an active nuclear program, but intent to produce weapons is unconfirmed.
- b A program for nuclear weapons was debated, but active nuclear programs were civilian in nature.
- c Canada had between 250 and 450 U.S.-supplied nuclear weapons deployed on Canadian delivery systems until the early 1980s. In 1978, Prime Minister Pierre Trudeau declared that Canada was “the first nuclear-armed country to have chosen to divest itself of nuclear weapons.” See Duane Bratt, “Canada’s Nuclear Schizophrenia,” *Bulletin of the Atomic Scientists*, March/April 2002, 58, no. 2, pp. 44–50.
- d Though West Germany never went beyond consideration of an indigenous nuclear weapon program, Bonn did possess U.S.-supplied nuclear weapons. These weapons required the explicit approval of the American president before they could be used.

¹³⁷ George Perkovich, Jessica T. Mathews, Joseph Cirincione, Rose Gottemoeller, and Jon B. Wolfsthal, *Universal Compliance: A Strategy for Nuclear Security*, The Carnegie Endowment for International Peace, March 2005, pp. 20, On-line database, available at: www.CarnegieEndowment.org/strategy

This table shows that there are thirty-five nations who have or have had nuclear weapons and/or nuclear programs. It also helps to illustrate that we, in the global sense, have reached a crossroads regarding nuclear weapons and programs. The policies and cooperation that are implemented today will determine if the current nuclear downsizing trend will continue. The strengthening of the Nuclear Nonproliferation Regime is a good starting point from which further cooperation, nuclear nonproliferation policies, and disarmament initiatives can thrive so as to continue reducing the world's nuclear weapons and weapons programs. Furthermore, globalizing the U.S.-Russian collaborative effort within the Cooperative Threat Reduction program can provide structure and a framework from which other suspect nations can be approached and effectively deterred from producing or acquiring nuclear weapons or fissile material. In conjunction with the Cooperative Threat Reduction program, the Bush Administration's push for the Proliferation Security Initiative will aid in curtailing the possibility of nuclear terrorism by blocking illicit transfers of sensitive material and bringing international attention to export control mechanisms. Furthermore, a move to strengthen international laws, treaties, and agreements while offering monetary and other aid incentives may provide alternative motivations for nations to abandon their nuclear weapons desires; and at the same time, these incentives could offer options and possible gainful employment to scientific and technology experts to keep them from selling their abilities to rogue states or terrorist organizations.

In conclusion, the end result requires a comprehensive approach to coordinating the current and future policies, programs, and agreements to ensure that threat reduction and arms elimination continues between the United States and Russia. Moreover, the globalization of these programs and policies can help to advance nuclear nonproliferation efforts in order to secure the world's nuclear weapons and material. This will result in further coordination to aid in preventing nuclear proliferation to rogue states and terrorist organizations. Programs, such as the Cooperative Threat Reduction program, the Proliferation Security Initiative, and policy reviews, such as the *Universal Compliance: A Strategy for Nuclear Security*, put out by the Carnegie Endowment for International Peace provide examples of how initially structured localized aid to ensure nuclear nonproliferation can evolve into international action to further drive threat reduction and

arms elimination programs. The relative brief history of threat reduction and arms elimination has entered a new era post September 11, 2001, and the action needed now requires the thwarting of international nuclear proliferation, while concomitantly coordinating the existing treaties and agreements to further cultivate and promote a positive U.S.-Russian cooperative relationship on issues of nuclear nonproliferation.

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